MINISTRY OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

STATE OF PALESTINE

NATIONAL FREQUENCY TABLE OF ALLOCATIONS AND APPLICATIONS

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Document History

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Contents

Abbreviations

(OR)	Off-Route
(R)	Route
GSM 1800	Global System for Mobile Communications using 1800 MHz band
ADS	Automatic Dependent Surveillance (Aeronautical)
AES	Aircraft Earth Stations
AGA	Air Ground Air
AIS	Automatic Identification System
ALS	Assistive Listening Systems
AM	Amplitude Modulation
AMS(R)S	Aeronautical Mobile Satellite (Route) Services
Appendix	Appendix of the ITU Radio Regulations
ASDE	Airport Surface Detection Equipment
AVI	Automatic Vehicle Identification
BBDR	Broad Band Disaster Relief
BFWA	Broadband Fixed Wireless Access
BMA	Building Material Analysis
BSS	Broadcasting Satellite Service
CB	Citizen Band

CEPT	European Conference of Postal And Telecommunications Administrations
CGC	Complementary Ground Component
CRS	Central Radio Station
CT	Cordless Telephone
DA2GC	Direct Air-to-Ground Communications
DEC	Decision
DECT	Digital Enhanced Cordless Telecommunication
D-GPS	Differential Global Positioning System
DME	Distance Measuring Equipment
DMO	Digital Radio Mondiale
DRM	Direct Mode Operation
DSC	Digital Selective Calling
DSI	Detailed Spectrum Investigation
DVB-T	Terrestrial Digital Video Broadcasting
E/s	Earth-to-space direction
ECA	European Common Allocation
ECC	Electronic Communications Committee
ECM	Electronic Countermeasures

ECP	European Common Proposal
EESS	Earth Exploration-Satellite Service
EFIS	European Frequency Information System
EGSM	Extended GSM
EISCAT	European Incoherent SCATter facility
ECA	European Common Allocation
ECC	Electronic Communications Committee
ECM	Electronic Countermeasures
ECP	European Common Proposal
EESS	Earth Exploration-Satellite Service
EFIS	European Frequency Information System
GSM	Global System for Mobile Communications
EISCAT	European Incoherent SCATter facility
ELT	Emergency locator transmitter
ENG	Electronic News Gathering
EPIRB	Emergency Position-Indicating Radiobeacon
ERC	European Radiocommunications Committee
ERO	European Radiocommunications Office

GSM-R	GSM for Railways
GSO	GeoStationary Orbit
HAPS	High Altitude Platform Systems
HDFS	High Density Fixed Service
HDFSS	High Density Fixed-Satellite Service
HDTV	High Definition Television
HEST	High E.i.r.p. Satellite Terminals
HF	High Frequency
HIPERLAN	High Performance Radio Local Area Network
IALA	International Association of Lighthouse Authorities
IBCN	Integrated Broadband Communications Network
IFF	Identification Friend or Foe
ILS	Instrument Landing System
IMO	International Maritime Organisation
IMT	International Mobile Telecommunications
IMT-2000	International Mobile Telecommunications-2000
IMT-Advanced	Systems beyond IMT-2000
IoT	Internet of Things
ISM	Industrial, Scientific and Medical

ITS	Intelligent Transport Systems
ITU	International Telecommunication Union
JTIDS	Joint Tactical Information Distribution System
LAES	Location Application for Emergency Services
LANs	Local Area Networks
LDC	Low Duty Cycle
EST	Low E.i.r.p. Satellite Terminals
LP-AMI	Low Power Active Medical Implants
LPR	Level Probing Radar
LT2	Location Tracking Type 2
MBANS	Medical Body Area Network Systems
MBR	Maritime Broadband Radio Links
MCA	Mobile Communications Services on Board Aircraft
MCV	Mobile Communication Services on Board Vessels
MES	Mobile Earth Stations
MFCN	Mobile/Fixed Communications Networks
LPR	Level Probing Radar

LT2	Location Tracking Type 2
MBANS	Medical Body Area Network Systems
MBR	Maritime Broadband Radio Links
MCA	Mobile Communications Services on Board Aircraft
MCV	Mobile Communication Services on Board Vessels
MES	Mobile Earth Stations
MFCN	Mobile/Fixed Communications Networks
MIDS	Multifunctional Information Distribution System
MIDS	Multifunctional Information Distribution System
MLS	Microwave Landing System
MSI	Maritime Safety Information
MSS	Mobile-Satellite Service
MWS	Multimedia Wireless System
NATO	North Atlantic Treaty Organisation
NAVTEX	Narrow-band direct-printing telegraphy system for transmission of navigational and meteorological warnings and urgent information to ships
NDB	Non-Directional Beacon
NGSO	Non-GeoStationary Orbit
NJFA	NATO Joint Civil/Military Frequency Agreement

NMR	Nuclear Magnetic Resonance

OB	Outside Broadcasting
PAMR	Public Access Mobile Radio
PKO	Peace Keeping Operations
PLB	Personal Locator Beacons
PMR	Professional Mobile Radio, Private Mobile Radio
PMSE	Programme Making and Special Events
POCSAG	Post Office Code Standards Advisory Group
PPDR	Public Protection and Disaster Relief
PWAP	Private Wide Area Paging
RA	Radio Astronomy
REC	Recommendation
RFID	Radio Frequency Identification
RLANS	Radio Local Area Network System
RR	ITU Radio Regulations
RTE	Radar Target Enhancer
RTTT	Road Transport & Traffic Telematics
s/E	space-to-Earth direction

SAB	Services Ancillary to Broadcasting
SAP	Services Ancillary to Programming
SAR(communications)	Search and Rescue
SIT	Satellite Interactive Terminal
SNG	Satellite News Gathering
S-PCS	Satellite Personal Communication System
SRD	Short Range Device
SRR	Short Range Radar
SRS	Space Research Service
SSR	Secondary Surveillance Radar
SUT	Satellite User Terminal
TACAN	Tactical Air Navigation
T-DAB	Terrestrial Digital Audio Broadcasting
TDD	Time Division Duplex
TETRA	Terrestrial Trunked Radio
TLPR	Tank Level Probing Radar
TRR	Tactical Radio Relays
TS	Terminal Station

TTT	Transport and Traffic Telematics
TV	Television
UIC	International Union for Railways
ULP-AMI	Ultra Low Power Active Medical Implants
ULP-MMI	Ultra Low Power Medical Membrane Implants
ULP-WMCE	Ultra-Low Power Wireless Medical Capsule Endoscopy
UMTS	Universal Mobile Telecommunications System
UWB	Ultra – Wideband
VDB	VHF ground-air Data Broadcast
VLBI	Very Long Baseline Interferometry (Radio Astronomy)
VOR	VHF Omni-directional Range
VSAT	Very Small Aperture Terminal
VTS	Vessel Traffic System (radar)
WAIC	Wireless Avionics Intra-Communication systems
WARC	World Administrative Radio Conference
WAS	Wireless Access System
WIA	Wireless Industrial Applications
WRC	World Radiocommunication Conference

PREFACE
GENERAL INFORMATION

1. Introduction

Radio spectrum use in Palestine must be authorised by the Ministry of Telecommunication and Information Technology (MTIT. According to the Telecommunication Law No. 3 of 1996, this use needs to be carefully planned to avoid harmful interference.

The Palestinian National Frequency Table of Allocations and Applications (NFTAA) is prepared and issued in accordance with provisions the Telecommunication Law No. 3 of 1996. Regarding the radio frequency spectrum management. The NFTAA details general classification of uses of various radio spectrum bands in Palestine (referred to as „allocations“). Radio spectrum allocations in NFTAA include allocation of the radio frequency spectrum to the various radio services categories in conformity with the international regulations governing radio spectrum i.e. Radio Regulations of the International Telecommunications Union (ITU) and in conformity with regional agreements concluded or acceded to by Palestine.

2. Principles of Spectrum Management

2.1 National Level

As radio frequency spectrum is limited resource, efficient use of this resource is essential for the functioning of modern communication societies. Telecommunication Law No. 3 of 1996 includes direct mandate to MTIT to manage radio spectrum and act appropriately in order to ensure efficient use of this resource. Regulation is fundamentally concerned with combining various interests of radio frequency users and manufacturers within aforementioned legal mandate. MTIT continuously analyses the spectrum requirements for existing and planned radio services in Palestine. This is necessary for efficient and equitable planning and coordination of radio frequencies in order to avoid interference.

MTIT strategy aims to regulate efficiently access to radio spectrum on a national and international level in a coordinated manner. It aims to ensure that Palestine's rights are respected in accordance with international framework. International bodies aim to harmonize the use of radio spectrum between the various radio services, thus any international decisions taken therefore play a role in national spectrum management.

2.2 International level

MTIT represents Palestine in regional and international bodies dealing with the radio spectrum management, where it safeguards Palestine's interest in order to promote them on an international (regional and global) level.

The requirements of industry and associated civil uses are handled via the international working activities of the ITU. As radio signals propagate across international borders, cross-border agreements regarding radio spectrum use become vital both between neighbouring countries and between economic interest blocks on a global scale. The use of all radio spectrum resources is being harmonized at the international level at the ITU World Radio Conferences (WRC) in order to ensure efficient and interference-free use of radio frequency spectrum.

The Radiocommunications Sector of the International Telecommunication Union (ITU-R) allocated worldwide radio spectrum to various radios services in accordance with the Radio Regulations (RR). The RR is an international treaty, which regulates the use of radio spectrum resources for all radio applications, as well as orbital positions of geostationary and non-geostationary satellites. This agreement is binding to ITU member states. The RR articles are revised because of resolutions of the WRC to adapt existing framework to ever-changing radio spectrum requirements in order to refine the requirements of existing applications or facilitate the introduction of new ones. The results of ITU WRC are set forth in „Final acts“.

3. Basic Provisions

Direct references have been made within NFTAA to the footnotes of the ITU Region 1 Table of Frequency Allocations, which apply to Palestine’s radio services or frequency band concerned. All remaining international footnotes that are not specifically mentioned in the ITU Table of Frequency Allocations do not therefore apply in Palestine.

The NFTAA thus qualifies the provisions of ITU Table of Frequency Allocations and makes additional provisions for domestic radio spectrum requirements. It also provides the framework within which frequency assignments are to be made for all services. The provisions of NFTAA shall therefore be applied to all radio services, transmitting or receiving within territory or territorial waters of Palestine as appropriate.

Where the provisions of ITU Table of Frequency Allocations and NFTAA differ, those of the latter will apply.

4. Uses of Spectrum

The document represents all uses of radio spectrum that are authorised in Palestine or that may be authorised in future. The conditions that are attached to the use of different radio frequency bands are set out in licenses issued by MTIT, and/or in regulations made by MTIT, where such use regulated by MTIT under Telecommunication Law No. 3 of 1996.

MTIT may, having consulted, as it considers appropriate, vary existing conditions of use, and may issue new authorisations, under responsibilities entitled to it by the Telecommunication Law No. 3 of 1996, and in accordance with the mandates of other Palestinian laws and legislations. This document is therefore not binding on MTIT but MTIT will take due note of its content and consult where necessary during discharge of its duties.

Where regulations are in place to exempt radio spectrum systems from the need to issue license (licence exempt), these regulations take precedence over the detail shown in NFTAA.

5. Amendments

MTIT shall periodically review and update NFTAA, in consultation with the national authorities and concerned parties in Palestine, based on new developments in the radiocommunications sector and in conformity with ITU Table of Frequency Allocations, as the Radio Regulations being modified by WRC of ITU each three to four years.

Part 1
Terms and Definitions

6. Radiocommunication Definitions

6.1 General Terms

- **Administration**: Any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations.
- **Telecommunication**: Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems (CS[1]).
- **Radio**: A general term applied to the use of radio waves.
- **Radio waves or hertzian waves**: Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.
- **Radiocommunication**: Telecommunication by means of radio waves (CS) (CV[2]).
- **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.

[1] ITU Constitution
[2] ITU Convention

- **Radio direction finding**: Radiodetermination using the reception of radio waves for determining the direction of a station or object.

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

- **Coordinated Universal Time (UTC)**: Time scale, based on the second (SI), as described in Resolution 655. (WRC-15)

- **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.

6.2 Specific terms related to frequency management

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

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

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

6.2 Radio services

- **Radiocommunication service**: A service as defined in this Section involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes.

  In Radio Regulations, 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 (CV).

- **Mobile-satellite service**: A radiocommunication service:

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

  - between mobile earth stations by means of one or more space stations.

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

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

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

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

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

- **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-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 (CS).

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

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

- **Radiodetermination service:** A radiocommunication service for the purpose of radiodetermination.

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

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

- **Radionavigation service:** A radiodetermination service for the purpose of radionavigation.

- **Radionavigation-satellite service:** A radiodetermination-satellite service used for the purpose of radionavigation.

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

- **Maritime radionavigation service:** A radionavigation service intended for the benefit and for the safe operation of ships.

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

- **Aeronautical radionavigation service:** A radionavigation service intended for the benefit and for the safe operation of aircraft.

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

- **Radiolocation service:** A radiodetermination service for the purpose of radiolocation.

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

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

- **Meteorological aids service:** A radiocommunication service used for meteorological, including hydrological, observations and exploration.

- **Earth exploration-satellite service:** A radiocommunication service between earth stations and one or more space stations, 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.

6.4 Radio stations and systems

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

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

- **Terrestrial station:** A station effecting terrestrial radiocommunication.
    - In these Regulations, unless otherwise stated, any station is a terrestrial station.
- **Earth station:** A station located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication:
    - with one or more space stations; or
    - with one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.
- **Space station:** A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.
- **Survival craft station:** A mobile station in the maritime mobile service or the aeronautical mobile service intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment.
- **Fixed station:** A station in the fixed service.
- **High altitude platform station:** A station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.
- **Mobile station:** A station in the mobile service intended to be used while in motion or during halts at unspecified points.
- **Mobile earth station:** An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points.
- **Land station:** A station in the mobile service not intended to be used while in motion.
- **Land earth station:** An earth station in the fixed-satellite service or, in some cases, in the mobile-satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the mobile-satellite service.
- **Base station:** A land station in the land mobile service.
- **Base earth station:** An earth station in the fixed-satellite service or, in some cases, in the land mobile-satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the land mobile-satellite service.
- **Land mobile station:** A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent.

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

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

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

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

- **Ship earth station:** A mobile earth station in the maritime mobile-satellite service located on board ship.

- **On-board communication station:** A low-powered mobile station in the maritime mobile service intended for use for internal communications on board a ship, or between a ship and its lifeboats and life-rafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions.

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

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

  In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

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

- **Aircraft station:** A mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft.

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

- **Broadcasting station:** A station in the broadcasting service.

- **Radiodetermination Station:** A station in the radiodetermination service.

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

- **Radionavigation land station:** A station in the radionavigation service not intended to be used while in motion.

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

- **Radiolocation land station:** A station in the radiolocation service not intended to be used while in motion.

- **Radio direction-finding station:** A radiodetermination station using radio direction-finding.

- **Radiobeacon station:** A station in the radionavigation service the emissions of which are intended to enable a mobile station to determine its bearing or direction in relation to the radiobeacon station.

- **Emergency position-indicating radiobeacon station:** A station in the mobile service the emissions of which are intended to facilitate search and rescue operations.

- **Satellite emergency position-indicating radiobeacon:** An earth station in the mobile-satellite service the emissions of which are intended to facilitate search and rescue operations.

- **Standard frequency and time signal station:** A station in the standard frequency and time signal service.

- **Amateur station:** A station in the amateur service.

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

- **Experimental station:** A station utilizing radio waves in experiments with a view to the development of science or technique.

  This definition does not include amateur stations.

- **Ship’s emergency transmitter:** A ship's transmitter to be used exclusively on a distress frequency for distress, urgency, or safety purposes.

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

- **Primary radar:** A radiodetermination system based on the comparison of reference signals with radio signals reflected from the position to be determined.

- **Secondary radar:** A radiodetermination system based on the comparison of reference signals with radio signals retransmitted from the position to be determined.

- **Radar beacon (racon[3]):** A transmitter-receiver associated with a fixed navigational mark which, when triggered by a radar, automatically returns a distinctive signal which can appear on the display of the triggering radar, providing range, bearing and identification information.

- **Instrument landing system (ILS):** A radionavigation system, which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

- **Instrument landing system localizer:** A system of horizontal guidance embodied in the instrument landing system, which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway.

- **Instrument landing system glide path:** A system of vertical guidance embodied in the instrument landing system, which indicates the vertical deviation of the aircraft from its optimum path of descent.

- **Marker beacon:** A transmitter in the aeronautical radionavigation service, which radiates vertically a distinctive pattern for providing position information to aircraft.

- **Radio altimeter:** Radionavigation equipment, on board an aircraft or spacecraft, used to determine the height of the aircraft or the spacecraft above the Earth's surface or another surface.

- **Meteorological aids land station:** A station in the meteorological aids service not intended to be used while in motion.

- **Meteorological aids mobile station:** A station in the meteorological aids service intended to be used while in motion or during halts at unspecified points.

- **Radiosonde:** An automatic radio transmitter in the meteorological aids service usually carried on an aircraft, free balloon, kite or parachute, and which transmits meteorological data.

- **Adaptive system:** A radiocommunication system, which varies its radio characteristics according to channel quality.

[3] Short: **RA**dar + bea**CON**

- **Space system:** Any group of cooperating earth stations and/or space stations employing space radiocommunication for specific purposes.

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

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

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

  A satellite link comprises one up-link and one down-link.

- **Multi-satellite link:** A radio link between a transmitting earth station and a receiving earth station through two or more satellites, without any intermediate earth station. A multi-satellite link comprises one up-link, one or more satellite-to-satellite links and one down-link.

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

6.5 Operational terms

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

- **Telegraphy[4] :** A form of telecommunication in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use (CS 1016).

- **Telegram:** Written matter intended to be transmitted by telegraphy for delivery to the addressee. This term also includes radio telegrams unless otherwise specified (CS).

  In this definition, the term telegraphy has the same general meaning as defined in the Convention (CV).

[4] A graphic document records information in a permanent form and is capable of being filed and consulted; it may take the form of written or printed matter or of a fixed image.

- **Radiotelegram:** A telegram, originating in or intended for a mobile station or a mobile earth station transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service.

- **Radiotelex call:** A telex call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or the mobile-satellite service.

- **Frequency-shift telegraphy:** Telegraphy by frequency modulation in which the telegraph signal shifts the frequency of the carrier between predetermined values.

- **Facsimile:** A form of telegraphy for the transmission of fixed images, with or without half-tones, with a view to their reproduction in a permanent form.

- **Telephony:** A form of telecommunication primarily intended for the exchange of information in the form of speech (CS 1017).

- **Radiotelephone call:** A telephone call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service.

- **Simplex operation:** Operating method in which transmission is made possible alternately in each direction of a telecommunication channel, for example, by means of manual control[5].

- **Duplex operation:** Operating method in which transmission is possible simultaneously in both directions of a telecommunication channel[8].

- **Semi-duplex operation:** A method, which is simplex operation at one end of the circuit and duplex operation at the other[8].

- **Television:** A form of telecommunication for the transmission of transient images of fixed or moving objects.

- **Individual reception (in the broadcasting-satellite service):** The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and in particular those possessing small antennae.

- **Community reception (in the broadcasting-satellite service):** The reception of emissions from a space station in the broadcasting-satellite service by

[5] In general, *duplex operation* and *semi-duplex operation* require two frequencies in *radiocommunication*; *simplex operation* may use either one or two.

receiving equipment, which in some cases may be complex and have antennae larger than those used for individual reception, and intended for use:

- by a group of the general public at one location; or
- through a distribution system covering a limited area.

- **Telemetry:** The use of telecommunication for automatically indicating or recording measurements at a distance from the measuring instrument.
- **Radiotelemetry:** Telemetry by means of radio waves.
- **Space Telemetry:** The use of telemetry for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.
- **Telecommand:** The use of telecommunication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.
- **Space telecommand:** The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate functions of equipment on an associated space object, including the space station.
- **Space tracking:** Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object.

6.6 Characteristics of emissions and radio equipment

- **Radiation:** The outward flow of energy from any source in the form of radio waves.
- **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.
- **Class of emission:** The set of characteristics of an emission, designated by standard symbols, e.g. type of modulation of the main carrier, modulating signal, type of information to be transmitted, and also, if appropriate, any additional signal characteristics.
- **Single-sideband emission:** An amplitude modulated emission with one sideband only.

- **Full carrier single-sideband emission:** A single-sideband emission without reduction of the carrier.

- **Reduced carrier single-sideband emission:** A single-sideband emission in which the degree of carrier suppression enables the carrier to be reconstituted and to be used for demodulation.

- **Suppressed carrier single-sideband emission:** A single-sideband emission in which the carrier is virtually suppressed and not intended to be used for demodulation.

- **Out-of-band emission:** Emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

- **Spurious emission:** Emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

- **Unwanted emissions:** Consist of spurious emissions and out-of-band emissions.

- **Assigned frequency band:** The frequency band within which the emission of a station is authorized; the width of the band equals the necessary bandwidth plus twice the absolute value of the frequency tolerance. Where space stations are concerned, the assigned frequency band includes twice the maximum Doppler shift that may occur in relation to any point of the Earth's surface.

- **Assigned frequency:** The center of the frequency band assigned to a station.

- **Characteristic frequency:** A frequency, which can be easily identified and measured in a given emission.

  A carrier frequency may, for example, be designated as the characteristic frequency.

- **Reference frequency:** A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the center of the frequency band occupied by the emission.

- **Frequency tolerance:** The maximum permissible departure by the center frequency of the frequency band occupied by an emission from the assigned frequency or, by the

characteristic frequency of an emission from the reference frequency. Table of frequency tolerance presented in Appendix 2 to ITU Radio Regulations.

The frequency tolerance is expressed in parts in 10^6 or in Hertz.

- **Necessary bandwidth:** For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

- **Occupied bandwidth:** The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage ß/2 of the total mean power of a given emission.

  Unless otherwise specified in an ITU-R Recommendation for the appropriate class of emission, the value of ß/2 should be taken as 0.5%.

- **Right-hand (clockwise) polarized wave:** An elliptically-or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction.

- **Left-hand (anticlockwise) polarized wave:** An elliptically-or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left-hand or anticlockwise direction.

- **Power:** Whenever the power of a radio transmitter, etc. is referred to it shall be expressed in one of the following forms, according to the class of emission, using the arbitrary symbols indicated:

  - peak envelope power (PX or *p*X);
  - mean power (PY or *p*Y);
  - carrier power (PZ or *p*Z).

  For different classes of emission, the relationships between peak envelope power, mean power and carrier power, under the conditions of normal operation and of no modulation, are contained in ITU-R Recommendations, which may be used as a guide.

  For use in formulae, the symbol *p* denotes power expressed in watts and the symbol P denotes power expressed in decibels relative to a reference level.

- **Peak envelope power (of a radio transmitter):** The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

- **Mean power (of a radio transmitter):** The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

- **Carrier power (of a radio transmitter):** The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under the condition of no modulation.

- **Gain of an antenna:** The ratio, usually expressed in decibels, of the power required at the input of a loss-free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum radiation. The gain may be considered for a specified polarization.

  Depending on the choice of the reference antenna, a distinction is made between:

  a) absolute or isotropic gain (G_i), when the reference antenna is an isotropic antenna isolated in space;

  b) gain relative to a half-wave dipole (G_d), when the reference antenna is a half-wave dipole isolated in space whose equatorial plane contains the given direction;

  c) gain relative to a short vertical antenna (G_v), when the reference antenna is a linear conductor, much shorter than one quarter of the wavelength, normal to the surface of a perfectly conducting plane which contains the given direction.

- **Equivalent isotropically radiated power (e.i.r.p.):** The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain).

- **Effective radiated power (e.r.p.) (in a given direction):** The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

- **Effective monopole radiated power (e.m.r.p.) (in a given direction):** The product of the power supplied to the antenna and its gain relative to a short vertical antenna in a given direction.

- **Troposphere scatter:** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the physical properties of the troposphere.

- **Ionospheric scatter:** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the ionization of the ionosphere.

6.7 Frequency sharing

- **Interference:** The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

- **Permissible interference[6] :** Observed or predicted interference which complies with quantitative interference and sharing criteria contained in ITU Radio Regulations or in ITU-R Recommendations or in special agreements as provided for in ITU Radio Regulations.

- **Accepted interference[9]:** Interference at a higher level than that defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations.

- **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 ITU Radio Regulations (CS).

- **Protection ratio (R.F.):** The minimum value of the wanted-to-unwanted signal ratio, usually expressed in decibels, at the receiver input, determined under specified conditions such that a specified reception quality of the wanted signal is achieved at the receiver output.

- **Coordination area:** When determining the need for coordination, the area surrounding an earth station sharing the same frequency band with terrestrial stations, or surrounding a transmitting earth station sharing the same bidirectionally allocated frequency band with receiving earth stations, beyond which the level of permissible interference will not be exceeded and coordination is therefore not required.

- **Coordination contour:** The line enclosing the coordination area.

- **Coordination distance:** When determining the need for coordination, the distance on a given azimuth from an earth station sharing the same frequency band with terrestrial stations, or from a transmitting earth station sharing the same bidirectionally allocated frequency band with receiving earth stations, beyond which the level of permissible interference will not be exceeded and coordination is therefore not required.

- **Equivalent satellite link noise temperature:** The noise temperature referred to the output of the receiving antenna of the earth station corresponding to the radio

[6] The terms “permissible interference” and “accepted interference” are used in the coordination of frequency assignments between administrations.

frequency noise power which produces the total observed noise at the output of the satellite link excluding noise due to interference coming from satellite links using other satellites and from terrestrial systems.

- **Effective boresight area (of a steerable satellite beam):** An area on the surface of the Earth within which the boresight of a steerable satellite beam is intended to be pointed.

  There may be more than one unconnected effective boresight area to which a single steerable satellite beam is intended to be pointed.

- **Effective antenna gain contour (of a steerable satellite beam):** An envelope of antenna gain contours resulting from moving the boresight of a steerable satellite beam along the limits of the effective boresight area.

6.8 Technical terms relating to space

- **Deep space:** Space at distances from the Earth equal to, or greater than, 2×10^6 km.

- **Spacecraft:** A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere.

- **Satellite:** A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body.

- **Active satellite:** A satellite carrying a station intended to transmit or retransmit radiocommunication signals.

- **Reflecting satellite:** A satellite intended to reflect radiocommunication signals.

- **Active sensor:** A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by transmission and reception of radio waves.

- **Passive sensor:** A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by reception of radio waves of natural origin.

- **Orbit:** The path, relative to a specified frame of reference, described by the center of mass of a satellite or other object in space subjected primarily to natural forces, mainly the force of gravity.

- **Inclination of an orbit (of an earth satellite):** The angle determined by the plane containing the orbit and the plane of the Earth's equator measured in degrees between 0° and 180° and in counter-clockwise direction from the Earth's equatorial plane at the ascending node of the orbit.

- **Period (of a satellite): The** time elapsing between two consecutive passages of a satellite through a characteristic point on its orbit.

- **Altitude of the apogee or of the perigee:** The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth.

- **Geosynchronous satellite:** An earth satellite whose period of revolution is equal to the period of rotation of the Earth about its axis.

- **Geostationary satellite:** A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth.

- **Geostationary-satellite orbit:** The orbit of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator.

- **Steerable satellite beam:** A satellite antenna beam that can be re-pointed.

6.9 Additional definitions

- **Electromagnetic wave polarization:** The orientation of electric field wave vector respect to a given direction.

- **Monitoring station:** An equipped station for doing measurement and investigation of received electromagnetic wave characteristics and authority.

- **National spectrum allocation chart:** A painted strips of nationally employed radio frequency allocation plan on a 70cm×100cm (or A0) sized paper sheet, which presents frequencies of edges of the allocated sub-bands, priority of allocations, type of radiocommunication services to which the frequency bands are allocated and informative notes. This chart may be updated in after the each World Radiocommunication Conference (WRC).

- **Short Range Device:** The term "Short Range Device" (SRD) is intended to cover the radio transmitters which provide either unidirectional or bi-directional communication, and which have low capability of causing interference to other radio equipment. SRDs use either integral, dedicated or external antennas and all modes of modulation can be permitted subject to relevant standards. Due to the many different services provided by

these devices, no description can be exhaustive; however, the following categories are amongst those covered:

- Telecommand and Telecontrol
- Telemetry
- Alarms
- Speech and Video.

ITU-R SM.1896 Recommendation is comprehensive reference to the utilized SRD applications worldwide.

- **LORAN:** Is a long range radio navigation systems used by ships or crafts to obtain a position fix. The system is based on the difference in transit time required for pulsed radio signals to arrive at the LORAN receiver from multiple synchronized omnidirectional transmitters. The receiving set provides a direct reading, in microsecond, of the time difference is measured between signals.

- **MSI:** In the maritime mobile service, these frequencies are used exclusively for the transmission of maritime safety information (MSI) (including meteorological and navigational warnings and urgent information) by coast stations to ships, by means of narrow-band direct-printing telegraphy.

- **NAVTEX:** The NAVTEX system is used for the automatic broadcast of localized Maritime Safety Information (MSI) using Radio Telex (also known as Narrow Band Direct Printing, or NBDP). The system mainly operates in the Medium Frequency radio band just above and below the old 500 kHz Morse Distress frequency. System range is generally 300 or so nautical miles from the transmitter. The NAVTEX system is designed to be used in GMDSS Sea Area A2, and is utilized mainly by those countries with relatively small areas of coastline and/or sea areas to cover. Major areas of NAVTEX coverage include the Mediterranean Sea, the North Sea, coastal areas around Japan and areas around the North American continent. DME (DISTANCE MEASURING EQUIPMENT): A system in the band 960-1 215 MHz in which the aircraft interrogator transmits a series of coded pulses which are received at the ground transponder and retransmitted on a new frequency 50 µs later. By timing the period from transmission of the interrogating pulse to the reception of the transponder reply, a measure is obtained of the distance of the aircraft from the transponder. Usually associated with ILS, MLS or VOR facility. When associated with a VOR, the DME facility is co-located with the VOR facility.

- **SSR (SECONDARY SURVEILLANCE RADAR):** The SSR system is used as an aid to air traffic services and it consists of two components: a ground interrogator and an airborne transponder. The ground interrogator can operate in different modes (A, B, C, D). Mode A is used to initiate a response from the aircraft transponder for identification and tracking; Mode C is used to initiate automatic pressure altitude transmission. The interrogation and control transmissions are in the ground to air direction on the centre

frequency 1 030 MHz. The reply transmission, in the air to ground direction, is on the centre frequency 1 090 MHz. The transponder antenna system, installed onboard aircraft has an omnidirectional antenna pattern in the horizontal plane. The SSR system is intended to provide service under all weather conditions at all bearings and at all distances between 1.85 km and 370 km, and at all operational altitudes up to at least 30 480 m above mean sea level between at least the angles of elevation of 0.5° and 45°.

- **MLS (MICROWAVE LANDING SYSTEMS):** MLS is a precision approach and landing guidance system that provides position information and various ground-to-air data. The position information is provided in a wide coverage sector and is determined by an azimuth angle measurement, an elevation angle measurement and a range (distance) measurement. The MLS equipment operates on a frequency pairing basis with the DME equipment. Radiators in a linear array are fed sequentially from a microwave power source which produces a Time Referenced Scanning Beam (TRSB) that is equivalent to the source moving along a linear track. An aircraft will receive the signal with a Doppler shift which depends on the component of the apparent velocity of the source towards the aircraft, and is proportional to the cosine of the angle between the aircraft and the line of the transmitting array. To eliminate effects of frequency drift and Doppler shift due to the movement of the aircraft, the same R.F. signal is simultaneously radiated from an antenna. Azimuth guidance is obtained from a horizontal transmitting array, while a vertical array gives guidance in the elevation plane. A measure of the distance to touchdown is obtained using a Precision DME in a frequency paired relationship with the MLS. The sharing criteria between MLS and radionavigation-satellite service is available in ITU-R M.1582.

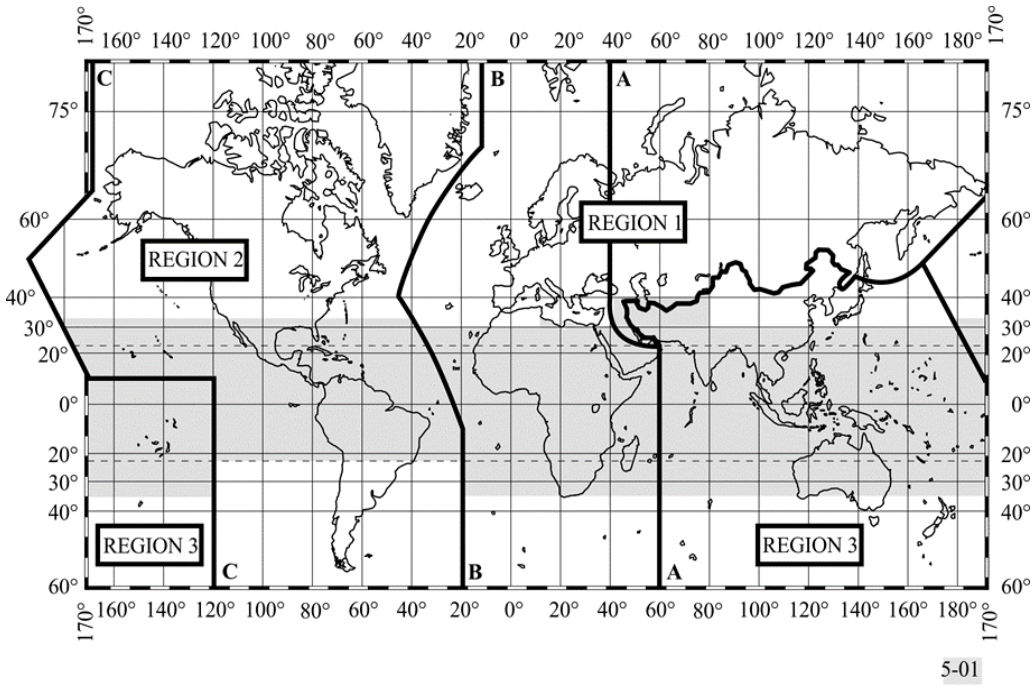
- **GLONASS:** The Global Navigation Satellite System (GLONASS) is based on a constellation of active satellites which continuously transmit coded signals in three frequency bands (1 598.0625 MHz to 1 605.3750 MHz, 1 242.9375 MHz to 1 248.6250 MHz) and 1201.7430 MHz to 1209.7800 MHz, which can be received by users anywhere on the Earth's surface to identify their position and velocity in real time based on ranging measurements. The system is a counterpart to the United States Global Positioning System (GPS) and both systems share the same principles in the data transmission and positioning methods. GLONASS is managed for the Russian Federation Government by the Russian Space Forces and the system is operated by the Coordination Scientific Information Center (KNITs) of the Ministry of Defense of the Russian Federation. The operational space segment of GLONASS consists of 24 satellites in three orbital planes with eight satellites in each plane. The three orbital planes are separated 120° relative to the equator, and the satellites are equally spaced by 45° in a plane. Each satellite operates in circular 19,100 km orbits at an inclination angle of 64.8°and each satellite completes an orbit in approximately 11 hours 15 minutes. ITU-R Recommendation M.1787 Annex 1 provides characteristics of GLONASS radionavigation system.

- **GPS:** The Navigation System with Timing and Ranging (NAVSTAR) Global Positioning System (GPS) was conceived as a ranging system from known positions of satellites in space to unknown positions on land, sea, in air and space. The GPS constellation consists of 24 satellites in 6 orbital planes with 4 satellites in each plane. The ascending nodes of the orbital planes are separated by 60°and the planes are inclined 55°. Each GPS satellite is in an approximately circular, semi-synchronous (20,200 km altitude) orbit. The orbits of

the GPS satellites are available by broadcast - superimposed on the GPS pseudorandom noise codes (PRN), or after post-processing to get precise ephemerides, they are available from organizations such as the Jet Propulsion Lab (JPL) or the International Geodetic Service (IGS) among others. The GPS receivers convert the satellite's signals into position, velocity, and time estimates for navigation, positioning, time dissemination, or geodesy. Each GPS satellite transmits data on two frequencies, L1 (1575.42 MHz) and L2 (1227.60 MHz). A third GPS channel centred at 1 176.45 MHz (GPS L5 signal) supports civil aviation applications. ITU-R Recommendation M.1787 Annex 2 provides the characteristics of GPS radionavigation system.

7. Regions and areas

For the allocation of frequencies the world has been divided into three Regions[7] as shown on the following map and described after map:



The shaded part represents the Tropical Zones. Different Regions and Tropical Zones are distinguished in accordance to the following definitions in detail:

Region 1: Region 1 includes the area limited on the east by line A (lines A, B and C are defined below) and on the west by line B, excluding any of the territory of the Islamic Republic of Iran which lies between these limits. It also includes the whole of the territory of Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Turkey and Ukraine and the area to the north of Russian Federation which lies between lines A and C.

Region 2: Region 2 includes the area limited on the east by line B and on the west by line C.

[7] It should be noted that where the words “regions” or “regional” are without a capital “R” in these Regulations, they do not relate to the three Regions here defined for purposes of frequency allocation.

***Region 3*:** Region 3 includes the area limited on the east by line C and on the west by line A, except any of the territory of Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Turkey and Ukraine and the area to the north of Russian Federation. It also includes that part of the territory of the Islamic Republic of Iran lying outside of those limits.

Tropical Zone: The whole of that area in Region 2 between the Tropics of Cancer and Capricorn, the whole of that area in Regions 1 and 3 contained between the parallels 30° North and 35° South with the addition of i) the area contained between the meridians 40° East and 80° East of Greenwich and the parallels 30° North and 40° North; and ii) that part of Libyan Arab Jamahiriya north of parallel 30° North. In Region 2, the Tropical Zone may be extended to parallel 33° North, subject to special agreements between the countries concerned in that Region.

The lines **A**, **B** and **C** are defined as follows:

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

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

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

The term **"African Broadcasting Area"** means

a) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North;

b) islands in the Indian Ocean west of meridian 60° East of Greenwich, situated between the parallel 40° South and the great circle arc joining the points 45° East, 11° 30′ North and 60° East, 15° North; and

c) islands in the Atlantic Ocean east of line B (as defined above) of these Regulations, situated between the parallels 40° South and 30° North. Television-signal broadcasting in this region is governed by Geneva-89 regional agreement, which includes the territory of Oman.

The **"European Broadcasting Area"** is bounded on the west by the western boundary of Region 1, on the east by the meridian 40° East of Greenwich and on the south by the parallel 30° North so as to include the northern part of Saudi Arabia and that part of those countries bordering the Mediterranean within these limits. In addition, Armenia, Azerbaijan, Georgia and those parts of the territories of Iraq, Jordan, Syrian Arab Republic, Turkey and Ukraine lying outside the above limits are included in the European Broadcasting Area.

The **"European Maritime Area"** is bounded to the north by a line extending along parallel 72° North from its intersection with meridian 55° East of Greenwich to its intersection with meridian 5° West, then along meridian 5° West to its intersection with parallel 67° North, thence along parallel 67° North to its intersection with meridian 32° West; to the west by a line extending along meridian 32° West to its intersection with parallel 30° North; to the south by a line extending along parallel 30° North to its intersection with meridian 43° East; to the east by a line extending along meridian 43° East to its intersection with parallel 60° North, thence along parallel 60° North to its intersection with meridian 55° East and thence along meridian 55° East to its intersection with parallel 72° North.

A **sub-Region** is an area consisting of two or more countries in the same Region.

8. Nomenclature

8.1 Frequency and wavelength bands

The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed in:

Frequency	Unit	Limits
kilohertz	kHz	up to and including 3 000 kHz
megahertz	MHz	above 3 MHz, up to and including 3 000 MHz
gigahertz	GHz	above 3 GHz, up to and including 300 GHz.
terahertz	THz	Above 300 GHz , up to and including 3 000 GHz

Table 1. ITU radio bands - Article 2, provision No. 2.1
Frequency Letter-Band Nomenclature

Band number	Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Corresponding metric subdivision
4	VLF	3 to 30 kHz	Myriametric waves 100km – 10 km
5	LF	30 to 300 kHz	Kilometric waves 10 km – 1 km
6	MF	300 to 3 000 kHz	Hectometric waves 1 km – 100 m
7	HF	3 to 30 MHz	Decametric waves 100 m – 10 m
8	VHF	30 to 300 MHz	Metric waves 10 m – 1 m
9	UHF	300 to 3 000 MHz	Decimetric waves 1 m – 100 mm
10	SHF	3 to 30 GHz	Centimetric waves 100 mm – 10 mm
11	EHF	30 to 300 GHz	Millimetric waves 10 mm – 1mm
12	THF	300 to 3 000 GHz	Decimillimetric waves 1 mm – 100 µm

NOTE 1: "Band N" (N = band number) extends from 0.3×10^N Hz to 3×10^N Hz.

NOTE 2: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9).

NOTE 3: VLF – Very Low Frequency, LF – Low Frequency, MF – Middle Frequency

HF – High Frequency, VHF – Very High Frequency

UHF – Ultra High Frequency, SHF – Super High Frequency

EHF - Extreme High Frequency, THF – Tremendously High Frequency

8.2 Other designations

Table 2. IEEE Standard 521-2019

The Standard Letter Designations for Radar-Frequency Bands

Band	Frequency Range (GHz)	Wavelength
HF	3 to 30 MHz	10 m – 1m
VHF	30 to 300 MHz	1000 cm – 100 cm
UHF	300 to 3 000 MHz	100 cm – 30 cm
L	1 – 2 GHz	30 cm – 15 cm
S	2 – 4 GHz	15 cm – 7.5 cm
C	4 – 8 GHz	7.5 cm – 3.8 cm
X	8 – 12 GHz	3.8 cm – 2.5 cm
Ku	12 – 18 GHz	2.5 cm – 1.7 cm
K	18 – 27 GHz	1.7 cm – 1.1 cm
Ka	27 – 40 GHz	1.1 cm – 0.75 cm
V	40 – 75 GHz	0.75 cm – 0.40 cm
W	75 – 110 GHz	0.40 cm – 0.27 cm
G	110 – 300 GHz	0.27 cm – 0.10 cm

9. Classification of emissions and necessary bandwidths

Emissions shall be designated according to their necessary bandwidth and their classification as explained below.

9.1 Necessary bandwidth

The necessary bandwidth determined in accordance with the formulae and examples shall be expressed by three numerals and one letter. The letter occupies the position of the decimal point and represents the unit of bandwidth. The first character shall be neither zero nor **K**, **M** or **G**.

Necessary bandwidths:

Low	High	Unit	Letter
0.001	999	Hz	H
1000	999	kHz	K
1000	999	MHz	M
1000	999	GHz	G

For the full designation of an emission, the necessary bandwidth, indicated in four characters, shall be added just before the classification symbols. When used, the necessary bandwidth shall be determined by one of the following methods:

1. use of the formulae and examples of necessary bandwidths and designation of corresponding emissions given in Recommendation ITU-R SM.1138-3; (WRC-19)
2. computation, in accordance with other ITU-R Recommendations;
3. measurement, in cases not covered by 1. and 2. above.

Examples:

0.002	Hz	=	H002		6	kHz	=	6K00		1.25	MHz	=	1M25
0.1	Hz	=	H100		12.5	kHz	=	12K5		2	MHz	=	2M00
25.3	Hz	=	25H3		180.4	kHz	=	180K		10	MHz	=	10M0
400	Hz	=	400H		180.5	kHz	=	181K		202	MHz	=	202M
2.4	kHz	=	2K40		180.7	kHz	=	181K		5.65	GHz	=	5G65

9.2 Classification

The class of emission is a set of characteristics conforming to below.

Emissions shall be classified and symbolized according to their basic characteristics and any optional additional characteristics. Two optional characteristics should be added for a more complete description of an emission.

Classification – App.1 Sec. 2

Characteristics	Number of Symbol	Description
Basic	First	Type of modulation of the main carrier
Basic	Second	Nature of signal(s) modulating the main carrier
Basic	Third	Type of information to be transmitted
Optional	Fourth	Details of signal(s)
Optional	Fifth	Nature of multiplexing

Modulation used only for short periods and for incidental purposes (such as, in many cases, for identification or calling) may be ignored provided that the necessary bandwidth as indicated is not thereby increased.

Where the fourth or the fifth symbol is not used this should be indicated by a dash where each symbol would otherwise appear.

9.2.1 Basic characteristics

Type of modulation of the main carrier	First Symbol
Emission of an unmodulated carrier	N
Emission in which the main carrier is amplitude-modulated including cases where sub-carriers are angle-modulated)	
Double-sideband	A
Single-sideband, full carrier	H
Single-sideband, reduced or variable level carrier	R
Single-sideband, suppressed carrier	J
Independent sidebands	B
Vestigial sideband	C
Emission in which the main carrier is angle-modulated	
Frequency modulation	F
Phase modulation	G
Emission in which the main carrier is amplitude-and angle-modulated either simultaneously or in a pre-established sequence	D
Emission of pulses	
Sequence of unmodulated pulses	P
A sequence of pulses	
modulated in amplitude	K
modulated in width/duration	L
modulated in position/phase	M
in which the carrier is angle-modulated during the angle-period of the pulse	Q
which is a combination of the foregoing or is produced by other means	V
Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse	W

Cases not otherwise covered	X

Nature of signal(s) modulating the main carrier	Second Symbol
No modulating signal	0
A single channel containing quantized or digital information without the use of a modulating sub-carrier	1
A single channel containing quantized or digital information with the use of a modulating sub-carrier	2
A single channel containing analogue information	3
Two or more channels containing quantized or digital information	7
Two or more channels containing analogue information	8
Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information	9
Cases not otherwise covered	X

9.2.2 Optional characteristics for the classification of emissions

Type of information to be transmitted	Third Symbol
No information transmitted	N
Telegraphy – for aural reception	A
Telegraphy – for automatic reception	B
Facsimile	C
Data transmission, telemetry, telecommand	D
Telephony (including sound broadcasting)	E
Television (video)	F
Combination of the above	W
Cases not otherwise covered	X

Details of signal(s)	Fourth Symbol
Two-condition code with elements of differing numbers and/or durations	A
Two-condition code with elements of the same number and duration without error-correction	B
Two-condition code with elements of the same number and duration with error-correction	C
Four-condition code in which each condition represents a signal element (or one or more bits)	D
Multi-condition code in which each condition represents a signal element (of one or more bits)	E
Multi-condition code in which each condition or combination of conditions represents a character	F
Sound of broadcasting quality (monophonic)	G
Sound of broadcasting quality (stereophonic or quadraphonic)	H
Sound of commercial quality	J
Sound of commercial quality with the use of frequency inversion or band-splitting	K
Sound of commercial quality with separate frequency-modulated signals to control the level of demodulated signal	L
Monochrome	M

Colour	N
Combination of the above	W
Cases not otherwise covered	X

10. Categories of services and allocations

10.1 Primary and secondary services

Where, in a box of the NFTAA a band is indicated as allocated to more than one service, either on a worldwide or Regional basis, such services are listed in the following order:

a) services the names of which are printed in "capitals" (example: **FIXED**); these are called "primary" services. Where a band is indicated in a footnote of the Table as allocated to a service "on a primary basis", in an area smaller than a Region, or in a particular country, this is a primary service only in that area or country.

b) services the names of which are printed in "normal characters" (example: **Mobile**); these are called "secondary" services (see Nos. 5.28 to 5.31). Stations of a secondary service shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date. Moreover, stations of a secondary service cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date. However, they can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

10.2 Additional allocations

Where a band is indicated in a footnote of the Table as **"also allocated"** to a service in an area smaller than a Region, or in a particular country, this is an **"additional"** allocation, i.e. an allocation which is added in this area or in this country to the service or services which are indicated in the Table. If the footnote does not include any restriction on the service or services concerned apart from the restriction to operate only in a particular area or country, stations of this service or these services shall have equality of right to operate with stations of the other primary service or services indicated in the Table. If restrictions are imposed on an additional allocation in addition to the restriction to operate only in a particular area or country, this is indicated in the footnote of the Table.

10.3 Alternative allocations

Where a band is indicated in a footnote of the Table as **"allocated"** to one or more services in an area smaller than a Region, or in a particular country, this is an **"alternative"** allocation, i.e. an allocation which replaces, in this area or in this country, the allocation indicated in the Table. If the footnote does not include any restriction on stations of the service or services concerned, apart from the

restriction to operate only in a particular area or country, these stations of such a service or services shall have an equality of right to operate with stations of the primary service or services, indicated in the Table, to which the band is allocated in other areas or countries. If restrictions are imposed on stations of a service to which an alternative allocation is made, in addition to the restriction to operate only in a particular country or area, this is indicated in the footnote.

10.4 Miscellaneous provisions

Where it is indicated in this Table that a service or stations in a service may operate in a specific frequency band subject to not causing harmful interference to another service or to another station in the same service, this means also that the service which is subject to not causing harmful interference cannot claim protection from harmful interference caused by the other service or other station in the same service. Vice versa, where it is indicated in this Table that a service or stations in a service may operate in a specific frequency band subject to not claiming protection from another service or from another station in the same service, this means also that the service which is subject to not claiming protection shall not cause harmful interference to the other service or other station in the same service.

Except if otherwise specified in a footnote, the term **“fixed service”** does not include systems using ionospheric scatter propagation.

10.5 Footnotes

The footnote references which appear in the Table below is for the allocated service or services and apply to more than one of the allocated services, or to the whole of the allocation concerned.

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

In certain cases, the names of countries appearing in the footnotes have been simplified in order to shorten the text.

Footnotes in ITU Table of Frequency Allocations are identified below the table by their number, e.g. **‘5.192’.** Where references are made in or below the tables to these international footnotes, they are similarly identified.

Footnotes in Palestine table are always identified by the prefix **‘PSE’** – e.g. **“PSE2”**.

Part 2
Table of National Frequency Allocations and Applications

This Palestinian table of National Frequency Allocations and Applications is divided into rows representing frequency band allocations of radio services, and it consists of four columns, as follows:

ITU Radio Regulations Region 1 Allocations:

- ITU Allocations as given in ITU Radio Regulations, Article 5 for Region 1 (as Palestine territories are located in Region 1) are listed to compare with the Palestine Allocations.
- The Region 1 column has references to ITU international footnotes as given in Article 5 of ITU Radio Regulations and shown as 5.XXX.
- The International Footnotes are compiled at the end of this table for reference purposes.

Palestine National Allocations:

- Contains applicable Radio Service Allocations, specific allocations for Palestine only are written in **bold** font.
- Palestine National Allocations column has references to ITU international footnotes as given in Article 5 of ITU Radio Regulations but only those relevant for sub-region of Arab States within ITU Region 1 and Palestine National Footnotes shown as PSEXX. These National Footnotes are also summarized below the table.

Applications:

- Includes summary of main radio services allowed for usage within Palestine in each band.
- Includes also additional classes of important radio applications as identified within each frequency band.
- Important exclusive frequency usage for certain applications like distress and safety communications.

Notes:

- Includes further regulatory references and remarks concerning the band and utilizations from the relevant sections in ITU Radio Regulations and other important international standards as well.

11. Table of National Frequency Allocations and Applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
0 Hz - 8.3 kHz			
(Not allocated) **5.53** **5.54**	(Not allocated) 5.53 5.54		
8.3 kHz - 9 kHz			
METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	METEOROLOGICAL AIDS 5.54A **RADIONAVIGATION 5.54B** **FIXED 5.54B** **MOBILE 5.54B**	Lightning detection systems	
9 kHz - 11.3 kHz			
METEOROLOGICAL AIDS 5.54A **RADIONAVIGATION**	METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	Active medical implants Inductive applications Lightning detection systems	Within the band 9-315 kHz Within the band 9-148.5 kHz
11.3 kHz - 14 kHz			
RADIONAVIGATION	RADIONAVIGATION	Active medical implants Inductive applications	Within the band 9-315 kHz Within the band 9-148.5 kHz
14 kHz - 19.95 kHz			
FIXED **MARITIME MOBILE 5.57** **5.55** **5.56**	FIXED MARITIME MOBILE 5.57 5.56 **PSE1**	Active medical implants Inductive applications Land military systems Maritime military systems	Within the band 9-315 kHz Within the band 9-148.5 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
19.95 kHz - 20.05 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
20.05 kHz - 70 kHz			
FIXED **MARITIME MOBILE 5.57** **5.56** **5.58**	FIXED MARITIME MOBILE 5.57 5.56 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
70 kHz - 72 kHz			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
72 kHz - 84 kHz			
FIXED **MARITIME MOBILE 5.57** **RADIONAVIGATION 5.60** **5.56**	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
		Standard frequency and time signal	77.5 kHz DCF time signal

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
84 kHz - 86 kHz			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
86 kHz - 90 kHz			
FIXED	FIXED	Active medical implants	Within the band 9-315 kHz
MARITIME MOBILE 5.57	MARITIME MOBILE 5.57		
RADIONAVIGATION	RADIONAVIGATION	Inductive applications	Within the band 9-148.5 kHz
5.56	5.56 **PSE1**		
		Land military systems	
		Maritime military systems	
90 kHz - 110 kHz			
RADIONAVIGATION 5.62	RADIONAVIGATION 5.62	Active medical implants	Within the band 9-315 kHz
Fixed	Fixed		
5.64	5.64 **PSE1**	Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
110 kHz - 112 kHz			
FIXED	FIXED	Active medical implants	Within the band 9-315 kHz
MARITIME MOBILE	MARITIME MOBILE		
RADIONAVIGATION	RADIONAVIGATION	Inductive applications	Within the band 9-148.5 kHz
5.64	5.64 **PSE1**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Land military systems	
		Maritime military systems	
112 kHz - 115 kHz			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
115 kHz - 117.6 kHz			
RADIONAVIGATION 5.60 **Fixed** **Maritime mobile** **5.64** **5.66**	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
117.6 kHz - 126 kHz			
FIXED **MARITIME MOBILE** **RADIONAVIGATION 5.60** **5.64**	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
126 kHz - 129 kHz			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
129 kHz - 130 kHz			
FIXED **MARITIME MOBILE** **RADIONAVIGATION 5.60** **5.64**	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
130 kHz - 135.7 kHz			
FIXED **MARITIME MOBILE** **5.64** **5.67**	FIXED MARITIME MOBILE 5.64 **PSE1**	Active medical implants	Within the band 9-315 kHz
		Inductive applications	Within the band 9-148.5 kHz
		Land military systems	
		Maritime military systems	
135.7 kHz - 137.8 kHz			
FIXED **MARITIME MOBILE**	FIXED MARITIME MOBILE	Active medical implants	Within the band 9-315 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Amateur 5.67A	Amateur 5.67A	Amateur	Within the band 135.7-137.8 kHz
5.64	5.64 **PSE1**		
5.67	5.67B	Inductive applications	Within the band 9-148.5 kHz
5.67B			
		Land military systems	
		Maritime military systems	
137.8 kHz - 148.5 kHz			
FIXED	FIXED	Active medical implants	Within the band 9-315 kHz
MARITIME MOBILE	MARITIME MOBILE		
5.64	5.64 **PSE1**	Inductive applications	Within the band 9-148.5 kHz
5.67			
		Land military systems	
		Maritime military systems	
148.5 kHz - 255 kHz			
BROADCASTING	BROADCASTING	Active medical implants	Within the band 9-315 kHz
5.68	5.69		
5.69	5.70	Broadcasting	Frequency Assignment plan GE75. Digital systems to be introduced
5.70			
		Inductive applications	Within the band 148.5 kHz - 30 MHz
255 kHz - 283.5 kHz			
BROADCASTING	BROADCASTING	Active medical implants	Within the band 9-315 kHz
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
5.70	5.70 **PSE1**	Aeronautical military systems	
		Beacons (aeronautical)	Frequency assignment GE85
		Broadcasting	Frequency Assignment plan GE75.Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Maritime military systems	
283.5 kHz - 315 kHz			
AERONAUTICAL RADIONAVIGATION **MARITIME RADIONAVIGATION (radiobeacons)** **5.73** **5.74**	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74 **PSE1**	Active medical implants Aeronautical military systems Beacons (aeronautical) Beacons (maritime) Inductive applications Maritime military systems	Within the band 9-315 kHz Frequency Assignment plan GE85 Frequency Assignment plan GE85 Within the band 148.5 kHz - 30 MHz
315 kHz - 325 kHz			
AERONAUTICAL RADIONAVIGATION **Maritime radionavigation (radiobeacons) 5.73** **5.75**	AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 **PSE1**	Aeronautical military systems Beacons (aeronautical) Beacons (maritime) Inductive applications Maritime military systems	 Frequency Assignment plan GE85 Frequency Assignment plan GE85. IALA - plan to allow differential GPS Within the band 148.5 kHz - 30 MHz
325 kHz - 405 kHz			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION **PSE1**	Aeronautical military systems Beacons (aeronautical) Inductive applications	 Frequency Assignment plan GE85 Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
405 kHz - 415 kHz			
RADIONAVIGATION 5.76	RADIONAVIGATION 5.76 **PSE1**	Aeronautical military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Beacons (aeronautical)	Frequency Assignment plan GE85
		Beacons (maritime)	Frequency Assignment plan GE85. IALA - plan to allow differential GPS
		Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
		Maritime military systems	
415 kHz - 435 kHz			
MARITIME MOBILE 5.79 **AERONAUTICAL RADIONAVIGATION**	MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION **PSE1**	Aeronautical military systems	
		Beacons (aeronautical)	Frequency Assignment plan GE85
		Inductive applications	Within the band 148.5 kHz - 30MHz. For RFID only within the band 400-600 kHz
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
435 kHz - 472 kHz			
MARITIME MOBILE 5.79 **Aeronautical radionavigation 5.77** **5.82**	MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82 **PSE1**	Aeronautical military systems	
		Emergency detection	442.2-450 kHz and 456.9-457.1 kHz
		Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
472 kHz - 479 kHz			
MARITIME MOBILE 5.79 **Amateur 5.80A** **Aeronautical radionavigation 5.77 5.80** **5.80B** **5.82**	MARITIME MOBILE 5.79 Amateur 5.80A **5.80B** Aeronautical radionavigation 5.77 5.80 5.82 **PSE1**	Aeronautical military systems	
		Amateur	
		Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
479 kHz - 495 kHz			
MARITIME MOBILE 5.79 5.79A **Aeronautical radionavigation 5.77** **5.82**	MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.82 **PSE1**	Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
		NAVTEX	490 kHz: NAVTEX transmission in national language
495 kHz - 505 kHz			
MARITIME MOBILE 5.82C	**MOBILE** **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
		Maritime military systems	
505 kHz - 526.5 kHz			
MARITIME MOBILE 5.79 5.79A 5.84 **AERONAUTICAL RADIONAVIGATION**	MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION **PSE1**	Aeronautical military systems	
		Beacons (aeronautical)	Frequency Assignment plan GE85
		Inductive applications	Within the band 148.5 kHz - 30 MHz. For RFID only within the band 400-600 kHz
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
		NAVTEX	518 kHz: NAVTEX transmission in national language

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
526.5 kHz - 1606.5 kHz			
BROADCASTING **5.87** **5.87A**	BROADCASTING **PSE33**	Broadcasting	Frequency Assignment plan GE75. Digital systems to be introduced. Oslo II Interim Agreement 1995, Art. 36, p. B5, Schedule 5, No. 2. 675 kHz.
		Inductive applications	Within the band 148.5 kHz - 30 MHz.For RFID only within the band 400-600 kHz
1 606.5 kHz - 1 625 kHz			
FIXED **MARITIME MOBILE 5.90** **LAND MOBILE** **5.92**	FIXED MARITIME MOBILE 5.90 LAND MOBILE **Radiolocation** **PSE1**	Inductive applications Land military systems Maritime communications Maritime military systems Radiodetermination applications	Within the band 148.5 kHz - 30 MHz Frequency Assignment plan GE85
1 625 kHz - 1 635 kHz			
RADIOLOCATION **5.93**	RADIOLOCATION **PSE1**	Inductive applications Radiodetermination applications Radiolocation (military)	Within the band 148.5 kHz - 30 MHz
1 635 kHz - 1 800 kHz			
FIXED **MARITIME MOBILE 5.90** **LAND MOBILE** **5.92** **5.96**	FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.96 **PSE1** **PSE25**	Inductive applications Land military systems Maritime communications Maritime military systems Radiodetermination applications	Within the band 148.5 kHz - 30 MHz Frequency Assignment plan GE85

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Amateur	Within the band 1 715-1 800 kHz
1 800 kHz - 1 810 kHz			
RADIOLOCATION	RADIOLOCATION	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.93	**PSE1**		
		Radiodetermination applications	
		Radiolocation (military)	
1 810 kHz - 1 850 kHz			
AMATEUR	AMATEUR	Amateur	Within the band 1810-2000 kHz
5.98	**FIXED 5.98 5.99**		
5.99	**MOBILE except aeronautical mobile 5.98 5.99**	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.100	5.100		
1 850 kHz - 2 000 kHz			
FIXED	FIXED	Amateur	Within the band 1850-2000 kHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.92	**Amateur**	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.96	5.96 **PSE1**		
5.103	5.103 **PSE25**	Land military systems	
		Maritime communications	
		Maritime military systems	
		Radiodetermination applications	
2 000 kHz - 2 025 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
5.92	5.103 **PSE1**	Land military systems	
5.103			
		Maritime communications	
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiodetermination applications	
2 025 kHz - 2 045 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
Meteorological aids 5.104	5.103 **PSE1**	Land military systems	
5.92	**5.104**		
5.103		Maritime communications	
		Maritime military systems	
		Oceanographic buoys	Meteorological
		Radiodetermination applications	
2 045 kHz - 2 160 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MARITIME MOBILE	MARITIME MOBILE		
LAND MOBILE	LAND MOBILE	Land military systems	
5.92	5.92 **PSE1**		
		Maritime communications	Frequency Assignment plan GE85
		Maritime military systems	
2 160 kHz - 2 170 kHz			
RADIOLOCATION	RADIOLOCATION	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.93	5.107 **PSE1**		
5.107		Radiodetermination applications	
		Radiolocation (military)	
2 170 kHz - 2 173.5 kHz			
MARITIME MOBILE	MARITIME MOBILE	Inductive applications	Within the band 148.5 kHz - 30 MHz
	PSE1		
		Maritime communications	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Maritime military systems	
2 173.5 kHz - 2 190.5 kHz			
MOBILE (distress and calling)	MOBILE (distress and calling)	DSC	2187.5 kHz (DSC for distress and calling)
5.108	5.108 **PSE1**		
5.109	5.109		
5.110	5.110	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.111	5.111		
		Maritime communications	2182 kHz (Radiotelephony distress and calling). 2174.5 kHz (Telex distress traffic)
2 190.5 kHz - 2 194 kHz			
MARITIME MOBILE	MARITIME MOBILE **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	
		Maritime military systems	
2 194 kHz - 2 300 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
5.92	5.103 **PSE1**	Land military systems	
5.103			
5.112		Maritime communications	
		Maritime military systems	
		Radiodetermination applications	
2 300 kHz - 2 498 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
BROADCASTING 5.113	5.103 **PSE1**	Land military systems	
5.103			
		Maritime communications	
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 498 kHz - 2 501 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	Inductive applications	Within the band 148.5 kHz - 30 MHz
2 501 kHz - 2 502 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research**	STANDARD FREQUENCY AND TIME SIGNAL Space research	Inductive applications	Within the band 148.5 kHz - 30 MHz
2 502 kHz - 2 625 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.92** **5.103** **5.114**	FIXED MOBILE except aeronautical mobile (R) 5.92 **PSE1** 5.103 5.114	Inductive applications Land military systems Maritime military systems Radiodetermination applications	Within the band 148.5 kHz - 30 MHz
2 625 kHz - 2 650 kHz			
MARITIME MOBILE **MARITIME RADIONAVIGATION** **5.92**	MARITIME MOBILE MARITIME RADIONAVIGATION 5.92 **PSE1**	Inductive applications Maritime communications Maritime military systems	Within the band 148.5 kHz - 30 MHz
2 650 kHz - 2 850 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.92** **5.103**	FIXED MOBILE except aeronautical mobile (R) 5.92 **PSE1** 5.103	Inductive applications Land military systems Maritime military systems Radiodetermination applications	Within the band 148.5 kHz - 30 MHz
2 850 kHz - 3 025 kHz			
AERONAUTICAL MOBILE (R) **5.111** **5.115**	AERONAUTICAL MOBILE (R) 5.111 **PSE1** 5.115	Aeronautical communications Aeronautical military systems	Appendix 27 Allotment Plan

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		SAR (communications)	3023 kHz (Aeronautical/Maritime radiotelephony SAR coordination)
3 025 kHz - 3 155 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
3 155 kHz - 3 200 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.116** **5.117**	FIXED MOBILE except aeronautical mobile (R) 5.116 **PSE1** 5.117	Inductive applications	Within the band 3155 - 3400 kHz; and within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime communications	
		Maritime military systems	
3 200 kHz - 3 230 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **BROADCASTING 5.113** **5.116**	FIXED MOBILE except aeronautical mobile (R) 5.116 **PSE1**	Inductive applications	Within the band 3155 - 3400 kHz; and within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime communications	
		Maritime military systems	
3 230 kHz - 3 400 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **BROADCASTING 5.113**	FIXED MOBILE except aeronautical mobile (R) 5.116 **PSE1**	Inductive applications	Within the band 3155 - 3400 kHz; and within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.116 **5.118**		Land military systems Maritime communications Maritime military systems	
3 400 kHz - 3 500 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications Aeronautical military systems Inductive applications	Appendix 27 Allotment Plan. Including HF Data Links Within the band 148.5 kHz - 30 MHz
3 500 kHz - 3 800 kHz			
AMATEUR **FIXED** **MOBILE except aeronautical mobile** **5.92**	AMATEUR FIXED MOBILE except aeronautical mobile 5.92 **PSE1**	Amateur Inductive applications Land military systems Maritime communications Maritime military systems	 Within the band 148.5 kHz - 30 MHz
3 800 kHz - 3 900 kHz			
FIXED **AERONAUTICAL MOBILE (OR)** **LAND MOBILE**	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE **PSE1**	Aeronautical communications Aeronautical military systems Inductive applications Land military systems	Appendix 26 Allotment Plan Within the band 148.5 kHz - 30 MHz
3 900 kHz - 3 950 kHz			
AERONAUTICAL MOBILE (OR) **5.123**	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications Aeronautical military systems	Appendix 26 Allotment Plan

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
3 950 kHz - 4 000 kHz			
FIXED **BROADCASTING**	FIXED BROADCASTING **PSE1**	Broadcasting	Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
4 000 kHz - 4 063 kHz			
FIXED **MARITIME MOBILE** **5.127** **5.126**	FIXED MARITIME MOBILE 5.127 **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime communications	Appendix 17 channeling plan.Appendix 25 allotment plan
		Maritime military systems	
4 063 kHz - 4 438 kHz			
MARITIME MOBILE **5.79A** **5.109** **5.110** **5.130** **5.131** **5.132** **5.128**	MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128 **PSE1**	DSC	4207.5 kHz (DSC distress traffic). Ship stations 4208, 4208.5, 4209 kHz. Coast stations 4219.5, 4220, 4220.5 kHz (DSC calling)
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channelling plan. Appendix 25 allotment plan. 4125 kHz (Radiotelephony distress and safety traffic. 4177.5 kHz (Telex distress traffic). 4209.5 kHz (Meteorological and navigational warnings. 4210 kHz (Safety Information)
		Maritime military systems	
		NAVTEX	4209.5 kHz
		Railway applications	4234 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
4 438 kHz - 4 488 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
Radiolocation 5.132A	Radiolocation 5.132A	Land military systems	
5.132B	**PSE1**	Maritime military systems	
		Radiolocation (military)	
4 488 kHz - 4 650 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		
	PSE1	Land military systems	
		Maritime military systems	
4 650 kHz - 4 700 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical communications	Appendix 27 Allotment Plan. Including HF Data Links
	PSE1	Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
4 700 kHz - 4 750 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical communications	Appendix 26 Allotment Plan
	PSE1	Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
4 750 kHz - 4 850 kHz			
FIXED	FIXED	Aeronautical communications	
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
LAND MOBILE	LAND MOBILE	Aeronautical military systems	
BROADCASTING 5.113	**PSE1**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
4 850 kHz - 4 995 kHz			
FIXED **LAND MOBILE** **BROADCASTING 5.113**	FIXED LAND MOBILE **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
4 995 kHz - 5 003 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	Inductive applications	Within the band 148.5 kHz - 30 MHz
5 003 kHz - 5 005 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research**	STANDARD FREQUENCY AND TIME SIGNAL Space research	Inductive applications	Within the band 148.5 kHz - 30 MHz
5 005 kHz - 5 060 kHz			
FIXED **BROADCASTING 5.113**	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
5 060 kHz - 5 250 kHz			
FIXED **Mobile except aeronautical mobile** **5.133**	FIXED Mobile except aeronautical mobile **PSE1**	Inductive applications Land military systems Maritime military systems	Within the band 148.5 kHz - 30 MHz
5 250 kHz - 5 275 kHz			
FIXED **MOBILE except aeronautical mobile** **Radiolocation 5.132A** **5.133A**	FIXED MOBILE except aeronautical mobile Radiolocation 5.132A **PSE1**	Inductive applications Land military systems Maritime military systems Radiolocation (military)	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5 275 kHz - 5 351.5 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
	PSE1	Land military systems	
		Maritime military systems	
5 351.5 kHz - 5 366.5 kHz			
FIXED	FIXED	Amateur	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
Amateur 5.133B	Amateur 5.133B	Inductive applications	Within the band 148.5 kHz - 30 MHz
	PSE1	Land military systems	
		Maritime military systems	
5 366.5 kHz - 5 450 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
	PSE1	Land military systems	
		Maritime military systems	
5 450 kHz - 5 480 kHz			
FIXED	FIXED	Aeronautical communications	
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
LAND MOBILE	LAND MOBILE	Aeronautical military systems	
	PSE1	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
5 480 kHz - 5 680 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical communications	Appendix 27 Allotment Plan.Including HF Data Links
5.111	5.111 **PSE1**		
5.115	5.115	Aeronautical military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		SAR (communications)	5680 kHz (Aeronautical/Maritime radiotelephony SAR coordination)
5 680 kHz - 5 730 kHz			
AERONAUTICAL MOBILE (OR) **5.111** **5.115**	AERONAUTICAL MOBILE (OR) 5.111 **PSE1** 5.115	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		SAR (communications)	5680 kHz (Aeronautical/Maritime radiotelephony SAR coordination)
5 730 kHz - 5 900 kHz			
FIXED **LAND MOBILE**	FIXED LAND MOBILE **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
5900 kHz - 5950 kHz			
BROADCASTING 5.134 **5.136**	BROADCASTING 5.134 5.136	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
5 950 kHz - 6 200 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
6 200 kHz - 6 525 kHz			
MARITIME MOBILE 5.109 5.110 5.130 5.132 **5.137**	MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137 **PSE1**	DSC	6312 kHz (DSC distress traffice). 6312.5, 6313, 6313.5, 6331, 6331.5, 6332 kHz (DSC calling)

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channeling plan. Appendix 25 allotment plan. 6215 kHz. (Radiotelephony distress and safety traffic). 6268 kHz (Telex distress traffic). 6314 kHz (Maritime Safety Information)
		Maritime military systems	
6 525 kHz - 6 685 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications	Appendix 27 Allotment Plan. Including HF Data Links
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
6 685 kHz - 6 765 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
6 765 kHz - 7 000 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.138**	FIXED MOBILE except aeronautical mobile 5.138 **PSE1**	ISM	Within the band 6765-6795 kHz
		Inductive applications	Within the band 6765-6795 kHz; and within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime military systems	
7 000 kHz - 7 100 kHz			
AMATEUR **AMATEUR-SATELLITE** **5.140** **5.141**	AMATEUR AMATEUR-SATELLITE 5.140 5.141	Amateur	Within the band 7000-7200 kHz
		Inductive applications	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.141A			
7 100 kHz - 7 200 kHz			
AMATEUR	AMATEUR	Amateur	Within the band 7000-7200 kHz
5.141A	**FIXED 5.141B**		
5.141B	**MOBILE except aeronautical mobile (R) 5.141B**	Inductive applications	Within the band 148.5 kHz - 30 MHz
7 200 kHz - 7 300 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
7 300 kHz - 7 350 kHz			
BROADCASTING 5.134	BROADCASTING 5.134	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
5.143	5.143		
5.143A	5.143B		
5.143B		Inductive applications	Within the band 148.5 kHz - 30 MHz
7 350 kHz - 7 400 kHz			
BROADCASTING 5.134	BROADCASTING 5.134	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
5.143	**FIXED 5.143C**		
5.143A	5.143B		
5.143B		Inductive applications	Within the band 148.5 kHz - 30 MHz
5.143C			
5.143D			
7 400 kHz - 7 450 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
5.143B	**FIXED 5.143C**		
5.143C	5.143B		
		Inductive applications	Within the band 7400-8800 kHz; and within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
7 450 kHz - 8 100 kHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.144**	FIXED MOBILE except aeronautical mobile (R) **PSE1**	Inductive applications Land military systems Maritime military systems	Within the band 7400-8800 kHz; and within the band 148.5 kHz - 30 MHz
8 100 kHz - 8 195 kHz			
FIXED **MARITIME MOBILE**	FIXED MARITIME MOBILE **PSE1**	Inductive applications Land military systems Maritime communications Maritime military systems	Within the band 7400-8800 kHz; and within the band 148.5 kHz - 30 MHz Appendix 17 channeling plan
8 195 kHz - 8 815 kHz			
MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111 **PSE1**	DSC Inductive applications Maritime communications Maritime military systems	8414.5 kHz (DSC distress traffic). 8415, 8415.5, 8416, 8436.5, 8437, 8437.5 kHz (DSC calling) Within the band 7400-8800 kHz; and within the band 148.5 kHz - 30 MHz Appendix 17 channeling plan. Appendix 25 allotment plan. 8291 kHz (Radiotelephony distress and safety traffic).8376.5 kHz (Telex distress traffic). 8416.5 kHz (Maritime Safety Information)
8 815 kHz - 8 965 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications Aeronautical military systems Inductive applications	Appendix 27 Allotment Plan. Including HF Data Links Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
8 965 kHz - 9 040 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
9 040 kHz - 9 305 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
9 305 kHz - 9 355 kHz			
FIXED **Radiolocation 5.145A** **5.145B**	FIXED Radiolocation 5.145A **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
9 355 kHz - 9 400 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
9 400 kHz - 9 500 kHz			
BROADCASTING 5.134 **5.146**	BROADCASTING 5.134 5.146	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
9 500 kHz - 9 900 kHz			
BROADCASTING **5.147**	BROADCASTING 5.147	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
9 900 kHz - 9 995 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Land military systems	
9 995 kHz - 10 003 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) **5.111**	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	Inductive applications	Within the band 148.5 kHz - 30 MHz
10 003 kHz - 10 005 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research** **5.111**	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	Inductive applications SAR (communications)	Within the band 148.5 kHz - 30 MHz 10003 kHz (+/-3 kHz) concerning manned space vehicles
10 005 kHz - 10 100 kHz			
AERONAUTICAL MOBILE (R) **5.111**	AERONAUTICAL MOBILE (R) 5.111 **PSE1**	Aeronautical communications Aeronautical military systems Inductive applications	Appendix 27 Allotment Plan. Including HF Data Links Within the band 148.5 kHz - 30 MHz
10 100 kHz - 10 150 kHz			
FIXED **Amateur**	FIXED Amateur **PSE1**	Amateur Inductive applications Land military systems	 Within the band 148.5 kHz - 30 MHz
10 150 kHz - 11 175 kHz			
FIXED **Mobile except aeronautical mobile (R)**	FIXED Mobile except aeronautical mobile (R) **PSE1**	Inductive applications Land military systems Maritime military systems Railway applications	Within the band 10200-11000 kHz; and within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
11 175 kHz - 11 275 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
11 275 kHz - 11 400 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications	Appendix 27 Allotment Plan. Including HF Data Links
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
11 400 kHz - 11 600 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Railway applications	Mainly within the band 11100-16000 kHz
11 600 kHz - 11 650 kHz			
BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
11 650 kHz - 12 050 kHz			
BROADCASTING 5.147	BROADCASTING 5.147	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Railway applications	Mainly within the band 11100-16000 kHz
12 050 kHz - 12 100 kHz			
BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
12 100 kHz - 12 230 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Railway applications	Mainly within the band 11100-16000 kHz
12 230 kHz - 13 200 kHz			
MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE 5.109 5.110 5.132 5.145 **PSE1**	DSC	12577 kHz (DSC distress traffic). 12577.5, 12578, 12578.5, 12657, 12657.5, 12658 kHz (DSC calling)
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channeling plan. Appendix 25 allotment plan. 12290 kHz (Radiotelephony distress and safety traffic). 12520 kHz (Telex distress traffic). 12579 kHz (Maritime Safety Information)
		Maritime military systems	
		Railway applications	Mainly within the band 11100-16000 kHz
13 200 kHz - 13 260 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
13 260 kHz - 13 360 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications	Appendix 27 Allotment Plan. Including HF Data Links
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
13 360 kHz - 13 410 kHz			
FIXED **RADIO ASTRONOMY** **5.149**	FIXED RADIO ASTRONOMY 5.149 **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Radio astronomy	Continuum observations
		Railway applications	Mainly within the band 11100-16000 kHz
13 410 kHz - 13 450 kHz			
FIXED **Mobile except aeronautical mobile (R)**	FIXED Mobile except aeronautical mobile (R) **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime military systems	
		Railway applications	Mainly within the band 11100-16000 kHz
13 450 kHz - 13 550 kHz			
FIXED **Mobile except aeronautical mobile (R)** **Radiolocation 5.132A** **5.149A**	FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Railway applications	Mainly within the band 11100-16000 kHz
13 550 kHz - 13 570 kHz			
FIXED **Mobile except aeronautical mobile (R)** **5.150**	FIXED Mobile except aeronautical mobile (R) 5.150 **PSE1**	ISM	Within the band 13553-13567 kHz
		Inductive applications	Within the band 13553-13567 kHz; and within the band 148.5 kHz - 30 MHz
		Land military systems	
		Maritime military systems	
		Non-specific SRDs	Within the band 13553-13567 kHz
		Railway applications	Mainly within the band 11100-16000 kHz
13 570 kHz - 13 600 kHz			
BROADCASTING 5.134 **5.151**	BROADCASTING 5.134 5.151	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
13 600 kHz - 13 800 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
13 800 kHz - 13 870 kHz			
BROADCASTING 5.134 **5.151**	BROADCASTING 5.134 5.151	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
13 870 kHz - 14 000 kHz			
FIXED **Mobile except aeronautical mobile (R)**	FIXED Mobile except aeronautical mobile (R) **PSE1**	Inductive applications Land military systems Maritime military systems Railway applications	Within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz
14 000 kHz - 14 250 kHz			
AMATEUR **AMATEUR-SATELLITE**	AMATEUR AMATEUR-SATELLITE	Amateur Amateur-satellite Inductive applications Railway applications	Within the band 14000-14350 kHz Within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz
14 250 kHz - 14 350 kHz			
AMATEUR **5.152**	AMATEUR	Amateur Inductive applications Amateur Inductive applications Railway applications	Within the band 14000-14350 kHz Within the band 148.5 kHz - 30 MHz Within the band 14000-14350 kHz Within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz
14 350 kHz - 14 990 kHz			
FIXED **Mobile except aeronautical mobile (R)**	FIXED Mobile except aeronautical mobile (R) **PSE1**	Inductive applications Land military systems Maritime military systems Railway applications	Within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
14 990 kHz - 15 005 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) **5.111**	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
		SAR (communications)	14993 kHz (+/-3 kHz) concerning manned space vehicles
15 005 kHz - 15 010 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research**	STANDARD FREQUENCY AND TIME SIGNAL Space research	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
15 010 kHz - 15 100 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
15100 kHz - 15 600 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz
15 600 kHz - 15 800 kHz			
BROADCASTING 5.134 **5.146**	BROADCASTING 5.134 5.146	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Railway applications	Mainly within the band 11100-16000 kHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
15 800 kHz - 16 100 kHz			
FIXED **5.153**	FIXED **PSE1**	Inductive applications Land military systems Railway applications	Within the band 148.5 kHz - 30 MHz Mainly within the band 11100-16000 kHz
16 100 kHz - 16 200 kHz			
FIXED **Radiolocation 5.145A** **5.145B**	FIXED Radiolocation 5.145A **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
16 200 kHz - 16 360 kHz			
FIXED	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
16 360 kHz - 17 410 kHz			
MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE 5.109 5.110 5.132 5.145 **PSE1**	DSC Inductive applications Maritime communications Maritime military systems	16804.5 kHz (DSC distress traffic).16805, 16805.5, 16806, 16903, 16903.5, 16904 kHz (DSC calling) Within the band 148.5 kHz - 30 MHz Appendix 17 channeling plan.Appendix 25 allotment plan.16420 kHz (Radiotelephony distress and safety traffic).16695 kHz (Telex distress traffic).16806.5 kHz (Maritime Safety Information)
17 410 kHz - 17 480 kHz			
FIXED	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
17 480 kHz - 17 550 kHz			
BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
17 550 kHz - 17 900 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
17 900 kHz - 17 970 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications	Appendix 27 Allotment Plan. Including HF Data Links
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
17 970 kHz - 18 030 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR) **PSE1**	Aeronautical communications	Appendix 26 Allotment Plan
		Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
18 030 kHz - 18 052 kHz			
FIXED	FIXED **PSE1**	Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
18 052 kHz - 18 068 kHz			
FIXED **Space research**	FIXED Space research **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
18 068 kHz - 18 168 kHz			
AMATEUR **AMATEUR-SATELLITE** **5.154**	AMATEUR AMATEUR-SATELLITE	Amateur Amateur-satellite Inductive applications	Within the band 148.5 kHz - 30 MHz
18 168 kHz - 18 780 kHz			
FIXED **Mobile except aeronautical mobile**	FIXED Mobile except aeronautical mobile **PSE1**	DSC Inductive applications Land military systems Maritime military systems	18898.5, 18899. 18899.5 kHz (DSC calling) Within the band 148.5 kHz - 30 MHz
18 780 kHz - 18 900 kHz			
MARITIME MOBILE	MARITIME MOBILE **PSE1**	Inductive applications Maritime communications Maritime military systems	Within the band 148.5 kHz - 30 MHz Appendix 17 channeling plan
18 900 kHz - 19 020 kHz			
BROADCASTING 5.134 **5.146**	BROADCASTING 5.134	Broadcasting Inductive applications	Article 12 planning procedure. Digital systems to be introduced Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
19 020 kHz - 19 680 kHz			
FIXED	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
19 680 kHz - 19 800 kHz			
MARITIME MOBILE 5.132	MARITIME MOBILE 5.132 **PSE1**	DSC Inductive applications Maritime communications Maritime military systems	19703.5, 19704, 19704.5 kHz (DSC calling) Within the band 148.5 kHz - 30 MHz Appendix 17 channeling plan. Appendix 25 allotment plan.19680.5 kHz (Maritime Safety Information)
19 800 kHz - 19 990 kHz			
FIXED	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
19 990 kHz - 19 995 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research** **5.111**	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	Inductive applications SAR (communications)	Within the band 148.5 kHz - 30 MHz 19993 kHz (+/-3 kHz) concerning manned space vehicles
19 995 kHz - 20 010 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) **5.111**	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	Inductive applications	Within the band 148.5 kHz - 30 MHz
20 010 kHz - 21 000 kHz			
FIXED **Mobile**	FIXED Mobile **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Maritime military systems	
21 000 kHz - 21 450 kHz			
AMATEUR **AMATEUR-SATELLITE**	AMATEUR AMATEUR-SATELLITE	Amateur Amateur-satellite	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
21 450 kHz - 21 850 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
21 850 kHz - 21 870 kHz			
FIXED 5.155A **5.155**	FIXED **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
21 870 kHz - 21 924 kHz			
FIXED 5.155B	FIXED 5.155B **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
21 924 kHz - 22 000 kHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R) **PSE1**	Aeronautical communications Aeronautical military systems	Appendix 27 Allotment Plan. Including HF Data Links
		Inductive applications	Within the band 148.5 kHz - 30 MHz
22 000 kHz - 22 855 kHz			
MARITIME MOBILE 5.132 **5.156**	MARITIME MOBILE 5.132 **PSE1**	DSC	22374.5, 22375, 22375.5, 22444, 22444.5, 22445 kHz (DSC calling)

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channeling plan. Appendix 25 allotment plan. 22376 kHz safety information
		Maritime military systems	
22 855 kHz - 23 000 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.156	**PSE1**	Land military systems	
23 000 kHz - 23 200 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)		
5.156	**PSE1**	Land military systems	
		Maritime military systems	
23 200 kHz - 23 350 kHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical communications	
FIXED 5.156A	FIXED 5.156A		
	PSE1	Aeronautical military systems	
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Land military systems	
23 350 kHz - 24 000 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile 5.157	MOBILE except aeronautical mobile 5.157		
	PSE1	Land military systems	
		Maritime military systems	
24 000 kHz - 24 450 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
LAND MOBILE	LAND MOBILE		
	PSE1	Land military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
24 450 kHz - 24 600 kHz			
FIXED **LAND MOBILE** **Radiolocation 5.132A** **5.158**	FIXED LAND MOBILE Radiolocation 5.132A **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
24 600 kHz - 24 890 kHz			
FIXED **LAND MOBILE**	FIXED LAND MOBILE **PSE1**	Inductive applications Land military systems	Within the band 148.5 kHz - 30 MHz
24890 kHz - 24 990 kHz			
AMATEUR **AMATEUR-SATELLITE**	AMATEUR AMATEUR-SATELLITE	Amateur Amateur-satellite Inductive applications	 Within the band 148.5 kHz - 30 MHz
24 990 kHz - 25 005 kHz			
STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	Inductive applications	Within the band 148.5 kHz - 30 MHz
25 005 kHz - 25 010 kHz			
STANDARD FREQUENCY AND TIME SIGNAL **Space research**	STANDARD FREQUENCY AND TIME SIGNAL Space research	Inductive applications Space research	Within the band 148.5 kHz - 30 MHz Scientific and medical space research
25 010 kHz - 25 070 kHz			
FIXED **MOBILE except aeronautical mobile**	FIXED MOBILE except aeronautical mobile **PSE1**	Inductive applications Land military systems Maritime military systems	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
25 070 kHz - 25 210 kHz			
MARITIME MOBILE	MARITIME MOBILE	DSC	25208.5, 25209, 25209.5 kHz (DSC calling)
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channeling plan
		Maritime military systems	
25210 kHz - 25 550 kHz			
FIXED	FIXED	Inductive applications	Within the band 148.5 kHz - 30 MHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile **PSE1**	Land military systems	
		Maritime military systems	
25 550 kHz - 25 670 kHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Inductive applications	Within the band 148.5 kHz - 30 MHz
5.149	5.149	Radio astronomy	Continuum observations
25 670 kHz - 26 100 kHz			
BROADCASTING	BROADCASTING	Broadcasting	Article 12 planning procedure. Digital systems to be introduced
		Inductive applications	Within the band 148.5 kHz - 30 MHz
26 100 kHz - 26 175 kHz			
MARITIME MOBILE 5.132	MARITIME MOBILE 5.132 **PSE1**	DSC	26121, 26121.5, 26122 kHz (DSC calling)
		Inductive applications	Within the band 148.5 kHz - 30 MHz
		Maritime communications	Appendix 17 channeling plan. Appendix 25 allotment plan. 26100.5 kHz Maritime Safety Information
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
26 175 kHz - 26 200 kHz			
FIXED **MOBILE except aeronautical mobile**	FIXED MOBILE except aeronautical mobile **PSE1**	Inductive applications Land military systems Maritime military systems	Within the band 148.5 kHz - 30 MHz
26 200 kHz - 26 350 kHz			
FIXED **MOBILE except aeronautical mobile** **Radiolocation 5.132A** **5.133A**	FIXED MOBILE except aeronautical mobile Radiolocation 5.132A **PSE1**	Inductive applications Land military systems Maritime military systems	Within the band 148.5 kHz - 30 MHz
26 350 kHz - 27 500 kHz			
FIXED **MOBILE except aeronautical mobile** **5.150**	FIXED MOBILE except aeronautical mobile 5.150 **PSE1**	CB radio ISM Inductive applications Land military systems Maritime military systems Model control Non-specific SRDs Railway applications	Within the band 26.960-27.410 MHz Within the band 26.957-27.283 MHz Within the band 148.5 kHz - 30 MHz 26.995, 27.045, 27.095, 27.145, 27.195 MHz Within the band 26.957-27.283 MHz 27.095 MHz Eurobalise system
27.5 kHz - 28 MHz			
FIXED **METEOROLOGICAL AIDS** **MOBILE**	FIXED METEOROLOGICAL AIDS MOBILE **PSE1**	Aeronautical military systems Inductive applications Land military systems Maritime military systems	Within the band 148.5 kHz - 30 MHz

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
28 MHz - 29.7 MHz				
AMATEUR	AMATEUR		Amateur	
AMATEUR-SATELLITE	AMATEUR-SATELLITE			
			Amateur-satellite	
			Inductive applications	Within the band 148.5 kHz - 30 MHz
29.7 MHz - 30.005 MHz				
FIXED	MOBILE		Active medical implants	Within the band 30.0-37.5 MHz
MOBILE		**PSE1**		
			Aeronautical military systems	
			Inductive applications	Within the band 148.5 kHz - 30 MHz
			Land military systems	
			Maritime military systems	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
30.005 MHz - 30.01 MHz				
SPACE OPERATION (satellite identification)	MOBILE		Active medical implants	Within the band 30.0-37.5 MHz
FIXED		**PSE1**		
MOBILE			Aeronautical military systems	
SPACE RESEARCH				
			Land military systems	
			Maritime military systems	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
			Satellite systems (military)	

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
30.01 MHz - 37.5 MHz				
FIXED **MOBILE**	MOBILE	**PSE1**	Active medical implants	Within the band 30.0-37.5 MHz
			Aeronautical military systems	
			Land military systems	
			Maritime military systems	
			Model control	Within the band 34.995-35.225 MHz only for flying models
			PMR	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Within the band 30.01-34.90 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
37.5 MHz - 38.25 MHz				
FIXED **MOBILE** **Radio astronomy** **5.149**	MOBILE Radio astronomy 5.149	**PSE1**	Aeronautical military systems	
			Land military systems	
			Maritime military systems	
			PMR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio astronomy	Continuum observations
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
38.25 MHz - 39 MHz			
FIXED **MOBILE**	MOBILE **PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
39 MHz - 39.5 MHz			
FIXED **MOBILE** **Radiolocation 5.132A** **5.159**	MOBILE Radiolocation 5.132A **PSE1**	Aeronautical military systems Land military systems Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
			Meteor scatter communications	Within the band 39.0-39.2 MHz
			PMR	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
39.5 MHz - 39.986 MHz				
FIXED **MOBILE**	MOBILE	**PSE1**	Aeronautical military systems	
			Land military systems	
			Maritime military systems	
			Meteor scatter communications	Within the band 39.0-39.2 MHz
			PMR	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
39.986 MHz - 40.02 MHz				
FIXED	MOBILE		Aeronautical military systems	
MOBILE	Space research			
Space research		**PSE1**	Land military systems	
			Maritime military systems	
			PMR	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
40.02 MHz - 40.66 MHz				
FIXED	MOBILE		Aeronautical military systems	
MOBILE		**PSE1**		
			Land military systems	
			Maritime military systems	
			PMR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
40.66 MHz - 40.7 MHz			
FIXED	MOBILE	Aeronautical military systems	
MOBILE	5.150 **PSE1**		
5.150		ISM	
		Land military systems	
		Maritime military systems	
		Model control	40.665, 40.675, 40.685, 40.695 MHz
		Non-specific SRDs	
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
40.7 MHz - 40.98 MHz			
FIXED	MOBILE	Aeronautical military systems	
MOBILE	**PSE1**		
		Land military systems	
		Maritime military systems	
		PMR	
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
				systems including tour guide systems on a tuning range basis
40.98 MHz - 41.015 MHz				
FIXED **MOBILE** **Space research** **5.160** **5.161**	MOBILE Space research	**PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	
			Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
41.015 MHz - 42 MHz				
FIXED **MOBILE** **5.160** **5.161** **5.161A**	MOBILE	**PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
42 MHz - 42.5 MHz			
FIXED **MOBILE** **Radiolocation 5.132A** **5.160** **5.161B**	FIXED MOBILE Radiolocation 5.132A **PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
42.5 MHz - 44 MHz			
FIXED **MOBILE** **5.160** **5.161** **5.161A**	MOBILE **PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
44 MHz - 47 MHz			
FIXED **MOBILE** **5.162** **5.162A**	MOBILE **PSE1**	Aeronautical military systems Land military systems Maritime military systems PMR	
		Radio microphones and ALD	Within the band 29.7-47.0 MHz. Narrow band audio systems including tour guide systems on a tuning range basis
		Wind profilers	In the range 46-68 MHz, geographical sharing with other services
47 MHz - 50 MHz			
BROADCASTING **5.162A** **5.163** **5.164**	**LAND MOBILE** **PSE26** 5.164 **PSE1** 5.165	Earth exploration-satellite Land military systems	In the range 48.5-50 MHz. Space research/EESS

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.165			
		On-site paging	On site paging in the band 47.0-47.25 MHz
		PMR	Single frequency applications
		Wind profilers	In the range 46-68 MHz, geographical sharing with other services
50 MHz - 52 MHz			
BROADCASTING	**LAND MOBILE PSE26**	Amateur	
Amateur 5.166A 5.166B 5.166C 5.166D 5.166E	Amateur 5.166D 5.169A 5.169B		
5.169 5.169A 5.169B	5.164 **PSE1**	Land military systems	
5.162A	5.165		
5.164		PMR	Single frequency applications
5.165			
		Wind profilers	In the range 46-68 MHz, geographical sharing with other services
52 MHz - 54 MHz			
BROADCASTING	**LAND MOBILE PSE26**	Land military systems	
5.162A	5.164 **PSE1**		
5.164	5.165	PMR	Mobile station transmit band in 54-61 MHz paired with base station transmit band in 61-68 MHz. Single
5.165	5.169A		

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
5.169	5.169B			frequency applications
5.169A				
5.169B				
			Wind profilers	In the range 46-68 MHz, geographical sharing with other services
54 MHz - 68 MHz				
BROADCASTING	**LAND MOBILE**	**PSE26**	Land military systems	
5.162A	5.164	**PSE1**		
5.163			PMR	Mobile station transmit band in 54-61 MHz paired with base station transmit band in 61-68 MHz. Single frequency applications
5.164				
5.165				
5.171				
			Wind profilers	In the range 46-68 MHz, geographical sharing with other services
68 MHz - 70.45 MHz				
FIXED	**MOBILE**		Land military systems	
MOBILE except aeronautical mobile	**Amateur**			
5.175		**PSE1**	Maritime military systems	
		PSE10		
			PMR/PAMR	Mobile station transmit paired with 77.8-80.25 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
70.45 MHz - 74.8 MHz			
FIXED	MOBILE except aeronautical mobile	Land military systems	
MOBILE except aeronautical mobile	**Amateur**		
5.149	**Radio astronomy**	Maritime military systems	
5.175	5.149 **PSE1**		
5.177	**PSE10**	PMR/PAMR	Mobile station transmit paired with 80.25-84.6 MHz
5.178			
5.179			
		Radio Astronomy	Continuum observations (inter alia solar wind monitoring in 73-74.6 MHz)
74.8 MHz - 75.2 MHz			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	ILS	Marker beacons
5.180	**Mobile PSE27**		
5.181	5.180		
	5.181		
75.2 MHz - 87.5 MHz			
FIXED	**MOBILE**	Land military systems	
MOBILE except aeronautical mobile	**PSE1**		
5.175		Maritime military systems	
5.179			
5.187		PMR/PAMR	Mobile station transmit band in 75.2-77.7 MHz paired with base station transmit band in 85.0-87.5 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
87.5 MHz - 100 MHz			
BROADCASTING **5.190**	BROADCASTING	FM sound analogue	Geneva Agreement GE84
		Wireless audio/multimedia	Within the band 87.5-108.0 MHz
100 MHz - 108 MHz			
BROADCASTING **5.192** **5.194**	BROADCASTING	FM sound analogue	Geneva Agreement GE84
		Wireless audio/multimedia	Within the band 87.5-108.0 MHz
108 MHz - 117.975 MHz			
AERONAUTICAL RADIONAVIGATION **5.197** **5.197A**	AERONAUTICAL RADIONAVIGATION **AERONAUTICAL MOBILE (R)** 5.197 5.197A	Aeronautical communications	Safety and regularity of flights, below 112 MHz limited to ground based data link transmitters
		GBAS	GBAS/VDB within 112-117.975 MHz
		ILS	Localiser within the band 108-112 MHz
		VOR	Within the band 108-117.975 MHz
117.975 MHz - 121.45 MHz			
AERONAUTICAL MOBILE (R) **5.200**	AERONAUTICAL MOBILE (R) 5.200 **PSE2**	Aeronautical communications	Safety and regularity of flights. EN 301 841-3 is for ground-based equipment
121.45 MHz - 121.55 MHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	-	EN 301 841-3 is for ground-based equipment.

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.111	5.111		Maritime Personal Homing Beacon for search and rescue purposes
5.200	5.200		
		EPIRBs	Band only available for distress and safety
121.55 MHz - 136 MHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical communications	123.1 MHz Aeronautical mobile distress communication. EN 301 841-3 is for ground-based equipment
5.200	5.200 **PSE2**		
5.201	5.201		
136 MHz - 137 MHz			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical communications	EN 301 841-3 is for ground-based equipment
5.202	**AERONAUTICAL MOBILE (OR) 5.202 PSE2**		
137 MHz - 137.025 MHz			
SPACE OPERATION (space-to-Earth) 5.203C	SPACE OPERATION (space-to-Earth) 5.203C		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	Aeronautical military systems	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	Land military systems	
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed	**FIXED PSE28**	Land mobile	Mobile restricted to Aeronautical Mobile (OR), including air sport
Mobile except aeronautical mobile (R)	**MOBILE PSE28**		
5.204	5.204 **PSE1**		
5.205	5.205 **PSE3**	MSS Earth stations	Non-geostationary
5.206	5.206		
5.207	5.208	Satellite systems (military)	
5.208		Weather satellites	
137.025 MHz - 137.175 MHz			
SPACE OPERATION (space-to-Earth) 5.203C	SPACE OPERATION (space-to-Earth) 5.203C	Aeronautical military systems	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)	Land military systems	
Fixed	**FIXED PSE28**		
Mobile except aeronautical mobile (R)	**MOBILE PSE28**	Land mobile	Mobile restricted to Aeronautical Mobile (OR), including air sport
Mobile-satellite (space-to-Earth) 5.208A 5.208B	Mobile-satellite (space-to-Earth) 5.208A 5.208B		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.209	5.209		
5.204	5.204 **PSE1**	MSS Earth stations	Non-geostationary
5.205	5.205 **PSE3**		
5.206	5.206	Satellite systems (military)	
5.207	5.208		
5.208		Weather satellites	
137.175 MHz - 137.825 MHz			
SPACE OPERATION (space-to-Earth) 5.203C 5.209A	SPACE OPERATION (space-to-Earth) 5.203C 5.209A	Aeronautical military systems	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	Land military systems	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	Land mobile	Mobile restricted to Aeronautical Mobile (OR), including air sport
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed	**FIXED PSE28**		
Mobile except aeronautical mobile (R)	**MOBILE PSE28**	MSS Earth stations	Non-geostationary
5.204	5.204 **PSE1**		
5.205	5.205 **PSE3**	Satellite systems (military)	
5.206	5.206		
5.207	5.208	Weather satellites	
5.208			
137.825 MHz - 138 MHz			
SPACE OPERATION (space-to-Earth) 5.203C	SPACE OPERATION (space-to-Earth) 5.203C	Aeronautical military systems	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)	Land military systems	
Fixed	**FIXED PSE28**		
Mobile except aeronautical mobile (R)	**MOBILE PSE28**	Land mobile	Mobile restricted to Aeronautical Mobile (OR), including air sport
Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209	Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209		
5.204	5.204 **PSE1**	MSS Earth stations	Non-geostationary
5.205	5.205 **PSE3**		
5.206	5.206	Satellite systems (military)	
5.207	5.208		
5.208		Weather satellites	
138 MHz - 143.6 MHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical military systems	
5.210	**LAND MOBILE 5.211**		
5.211	**MARITIME MOBILE 5.211**	Land military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.212	**FIXED 5.212**		
5.214	**MOBILE 5.212**	Land mobile	
	Space research (space-to-Earth)		
	5.211 **PSE1**	Maritime military systems	
	5.214 **PSE2**		
		Non-specific SRDs	Within the band 138.20-138.45 MHz
143.6 MHz - 143.65 MHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical military systems	
SPACE RESEARCH (space-to-Earth)	**LAND MOBILE 5.211**		
5.211	**MARITIME MOBILE 5.211**	Land military systems	
5.212	**FIXED 5.212**		
5.214	**MOBILE 5.212**	Land mobile	
	SPACE RESEARCH (space-to-Earth)		
	5.211 **PSE1**	Maritime military systems	
	5.214 **PSE2**		
143.65 MHz - 144 MHz			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical military systems	
5.210	**LAND MOBILE 5.211**		
5.211	**MARITIME MOBILE 5.211**	Land military systems	
5.212	**FIXED 5.212**		
5.214	**MOBILE 5.212**	Land mobile	
	5.211 **PSE1**		
	5.214 **PSE2**	Maritime military systems	
144 MHz - 146 MHz			
AMATEUR	AMATEUR	Amateur	
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
5.216		Amateur-satellite	
146 MHz - 148 MHz			
FIXED	**MOBILE**	PMR/PAMR	Single frequency applications
Mobile except aeronautical mobile (R)	**PSE4**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
148 MHz - 149.9 MHz			
FIXED **MOBILE except aeronautical mobile (R)** **MOBILE-SATELLITE (Earth-to-space) 5.209** **5.218** **5.218A** **5.219** **5.221**	**MOBILE** MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 **PSE3** 5.218A **PSE4** 5.219 5.221	MSS Earth stations PMR/PAMR	Non-geostationary Mobile station transmit band paired with 152.6-154.5 MHz
149.9 MHz - 150.05 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MSS Earth stations	Non-geostationary
	MOBILE **PSE3**	PMR/PAMR	Single frequency applications
150.05 MHz - 153 MHz			
FIXED **MOBILE except aeronautical mobile** **RADIO ASTRONOMY** **5.149**	MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 **PSE4**	PMR/PAMR	150.05-151.4 MHz mobile station transmit paired with 154.65-156.0 MHz, 151.4-153 MHz, base station transmit paired with 146.8-148.4 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio astronomy	Continuum observations (inter-alia solar research)
153 MHz - 154 MHz			
FIXED **MOBILE except aeronautical mobile (R)** **Meteorologic Aids**	MOBILE except aeronautical mobile (R) **PSE4**	PMR/PAMR	Base station transmit paired with 148.4-149.4 MHz
154 MHz - 156.4875 MHz			
FIXED **MOBILE except aeronautical mobile (R)** **5.225A** **5.226**	MOBILE except aeronautical mobile (R) 5.225A **PSE4** 5.226 **PSE5**	Maritime communications	RR Appendix 18
		PMR/PAMR	154-154.5 MHz base station transmit paired with 149.4-149.9 MHz, 154.5-154.65 MHz single frequency appl. 154.65-156 MHz, base station transmit paired with 150.05-151.4 MHz
156.4875 MHz - 156.5125 MHz			
MARITIME MOBILE (distress and calling via DSC)	MARITIME MOBILE (distress and calling via DSC)	Maritime communications	RR Appendix 18

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.226	5.226 **PSE4**		
5.227	5.227 **PSE5**		
156.5125 MHz - 156.5375 MHz			
MARITIME MOBILE (distress and calling via DSC)	MARITIME MOBILE (distress and calling via DSC)	DSC	RR Appendix 18. Distress, safety and calling 156.525 MHz
5.111	5.111		
5.226	5.226		
156.5375 MHz - 156.5625 MHz			
MARITIME MOBILE (distress and calling via DSC)	MARITIME MOBILE (distress and calling via DSC)	Maritime communications	RR Appendix 18
	MOBILE except aeronautical mobile (R)		
5.226	5.226 **PSE4**		
5.227	5.227 **PSE5**		
156.5625 MHz - 156.7625 MHz			
FIXED	MOBILE except aeronautical mobile (R)	Maritime communications	RR Appendix 18
MOBILE except aeronautical mobile (R)	5.226 **PSE4**		
5.226	**PSE5**		
156.7625 MHz - 156.7875 MHz			
MARITIME MOBILE	**MARITIME MOBILE (distress and calling)**	Maritime communications	RR Appendix 18. Satellite AIS Earth-to-space
Mobile-satellite (Earth-to-space)	5.111		
5.111	5.226		
5.226	5.228		
5.228			
156.7875 MHz - 156.8125 MHz			
MARITIME MOBILE (distress and calling)	MARITIME MOBILE (distress and calling)	Maritime communications	RR Appendix 18. Distress, safety and calling 156.8 MHz for the maritime mobile VHF radiotelephone service
5.111	5.111		
5.226	5.226		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
156.8125 MHz - 156.8375 MHz			
MARITIME MOBILE **Mobile-satellite (Earth-to-space)** **5.111** **5.226** **5.228**	MARITIME MOBILE 5.111 5.226 5.228	Maritime communications	RR Appendix 18. Satellite AIS Earth-to-space
156.8375 MHz - 157.1875 MHz			
FIXED **MOBILE except aeronautical mobile** **5.226**	MOBILE except aeronautical mobile 5.226 **PSE4** **PSE5**	Maritime communications PMR/PAMR	RR Appendix 18
157.1875 MHz - 157.3375 MHz			
FIXED **MOBILE except aeronautical mobile** **Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC** **5.226**	MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226 **PSE4** **PSE5**	Maritime communications PMR/PAMR	RR Appendix 18

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
157.3375 MHz - 161.7875 MHz			
FIXED **MOBILE except aeronautical mobile** **5.226**	MOBILE except aeronautical mobile 5.226 **PSE4** **PSE5**	Maritime communications PMR/PAMR	RR Appendix 18
161.7875 MHz - 161.9375 MHz			
FIXED **MOBILE except aeronautical mobile** **Maritime mobile-satellite 5.208A 5.228AC 5.228AB 5.208B** **5.226**	MOBILE except aeronautical mobile 5.226 Maritime mobile-satellite 5.208A 5.228AC 5.228AB 5.208B 5.226 **PSE4** **PSE5**	Maritime communications PMR/PAMR	RR Appendix 18

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
161.9375 MHz - 161.9625 MHz			
FIXED **MOBILE except aeronautical mobile** **Maritime mobile-satellite (Earth-to-space)** **5.228AA** **5.226**	MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 **PSE4** **PSE5**	Maritime communications PMR/PAMR	RR Appendix 18
161.9625 MHz - 161.9875 MHz			
FIXED **MOBILE except aeronautical mobile** **Mobile-satellite (Earth-to-space) 5.228F** **5.226** **5.228A** **5.228B**	MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 **PSE4** **PSE5**	AIS Maritime communications	161.975 MHz RR Appendix 18
161.9875 MHz - 162.0125 MHz			
FIXED **MOBILE except aeronautical mobile** **Maritime mobile-satellite (Earth-to-space)** **5.228AA** **5.226** **5.229**	MOBILE except aeronautical mobile **MARITIME MOBILE-SATELLITE (Earth-to-space)** **5.228AA** 5.226 **PSE4** 5.229 **PSE5**	Maritime communications	RR Appendix 18
162.0125 MHz - 162.0375 MHz			
FIXED **MOBILE except aeronautical mobile**	MOBILE except aeronautical mobile 5.226 **PSE4**	AIS	162.025 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Mobile-satellite (Earth-to-space) 5.228F	5.229 **PSE5**	Maritime communications	RR Appendix 18
5.226			
5.228A			
5.228B			
5.229			
162.0375 MHz - 169.4 MHz			
FIXED	MOBILE except aeronautical mobile	PMR/PAMR	Single frequency applications 165.225-169.4 MHz mobile station transmit paired with 169.825-174.0 MHz, 162.05-165.2 MHz: Base station transmit paired with 157.45-160.6 MHz. 169.825-174 MHz Base station transmit paired with 165.225-169.4 MHz
MOBILE except aeronautical mobile	5.229 **PSE4**		
5.226			
5.229			
169.4 MHz - 169.8125 MHz			
FIXED	MOBILE except aeronautical mobile	Aids for hearing impaired	The bands 169.400-169.475 MHz; and 169.4875-169.5875; and within the band 169.4-174.0 MHz on a tuning range basis
MOBILE except aeronautical mobile	5.229		
5.226			
5.229		Meter reading	Within the band 169.400-169.475 MHz
		Non-specific SRDs	
169.8125 MHz - 174 MHz			
FIXED	MOBILE except aeronautical mobile	Aids for hearing impaired	The bands 169.400-169.475 MHz, 169.4875-169.5875 MHz and within the band 169.4-174.0 MHz on a tuning range basis
MOBILE except aeronautical mobile	5.229 **PSE4**		
5.226			
5.229		PMR/PAMR	Single frequency applications. 165.225-169.4 MHz mobile station transmit paired with 169.825-174.0 MHz. 162.05-165.2 MHz base station transmit paired with 157.45-160.6 MHz. 169.825-174 MHz base station transmit paired with 165.225-169.4 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio microphones and ALD	For ALD systems within the band 173.965-216 MHz on a tuning range basis
174 MHz - 223 MHz			
BROADCASTING **5.235** **5.237** **5.243**	BROADCASTING **LAND MOBILE PSE29** 5.235 5.237 5.243	Broadcasting (terrestrial) PMSE Radio microphones and ALD	Geneva Agreement 2006. TV Broadcasting T-DAB Audio links within 174-216 MHz On a tuning range basis within 174-216 MHz
223 MHz - 225 MHz			
BROADCASTING **Fixed** **5.243** **5.246** **5.247**	BROADCASTING **PSE30** **LAND MOBILE PSE30** **AERONAUTICAL RADIONAVIGATION 5.247** Fixed **PSE30** Mobile **PSE30** 5.243 5.246	Broadcasting (terrestrial)	Geneva Agreement 2006. TV Broadcasting T-DAB Except land mobile
225 MHz - 230 MHz			
BROADCASTING **Fixed** **Mobile** **5.246** **5.247**	BROADCASTING **PSE30** **LAND MOBILE PSE30** **AERONAUTICAL RADIONAVIGATION 5.247** Fixed **PSE30** Mobile **PSE30** **5.246 PSE1** **PSE6**	Broadcasting (terrestrial) Defence systems	Geneva Agreement 2006.This band is within the military tuning range 225-400 MHz. Sharing with defence on national basis. TV Broadcasting, T-DAB Except land mobile
230 MHz - 235 MHz			
FIXED **MOBILE**	MOBILE **AERONAUTICAL RADIONAVIGATION 5.247**	Defence systems	

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
5.247		**PSE1**	T-DAB	T-DAB sharing with defence on a national basis
5.251		**PSE6**		
5.252				
235 MHz - 240 MHz				
FIXED	MOBILE		Defence systems	
MOBILE	5.254	**PSE1**		
5.252		**PSE6**	T-DAB	T-DAB sharing with defence on a national basis
5.254				
240 MHz - 242.95 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
5.111		**PSE6**		
5.254				
5.256				
242.95 MHz - 243.05 MHz				
FIXED	**AERONAUTICAL MOBILE**		EPIRBs	Band only available for distress and safety purposes 243.0 MHz
MOBILE	5.111			
5.111	5.254			
5.254	5.256			
5.256				
243.05 MHz - 267 MHz				
FIXED	**MOBILE**		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE except aeronautical mobile	5.254	**PSE1**		
5.111		**PSE6**		
5.252				
5.254				
5.256				
5.256A				
267 MHz - 272 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
Space Operation (space-to-Earth)	5.257	**PSE6**		
5.254				

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
5.257				
272 MHz - 273 MHz				
SPACE OPERATION (space-to-Earth)	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
FIXED	5.254	**PSE1**		
MOBILE		**PSE6**		
5.254				
273 MHz - 312 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
5.254		**PSE6**		
312 MHz - 315 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
Mobile-satellite (Earth-to-space) 5.254 5.255	5.255	**PSE6**		
315 MHz - 322 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
5.254		**PSE6**		
322 MHz - 328.6 MHz				
FIXED	MOBILE		Defence systems	
MOBILE	RADIO ASTRONOMY			
RADIO ASTRONOMY	5.149	**PSE1**	Radio astronomy	Continuum and spectral line observations (e.g. deuterium), VLBI
5.149		**PSE6**		
328.6 MHz - 335.4 MHz				
AERONAUTICAL RADIONAVIGATION 5.258	AERONAUTICAL RADIONAVIGATION 5.258		ILS	Glide path
5.259	5.259			

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
335.4 MHz - 380 MHz				
FIXED	MOBILE		Defence systems	Ground based aeronautical mobile services with trancievers using AM
MOBILE	5.254	**PSE1**		
5.254		**PSE4**		
		PSE6		
380 MHz - 385 MHz				
FIXED	MOBILE		Defence systems	PPDR sharing with defence applications
MOBILE	5.254	**PSE1**		
5.254		**PSE6**	PPDR	Within the bands 384.8-385.0 and 394.8-395.0 MHz for AGA, 384.750-384.800 MHz and 394.750-394.800 MHz may be used as preferred extension bands for AGA. Within the bands 380-380.15 and 390-390.15 MHz for DMO. Mobile station transmit paired with 390.0-395.0 MHz. PPDR sharing with defence applications. PPDR on a tuning range basis in 380-470 MHz range
385 MHz - 387 MHz				
FIXED	MOBILE		Defence systems	
MOBILE	5.254	**PSE1**		
5.254		**PSE6**	PMR/PAMR	Digital land mobile PMR/PAMR. Mobile station transmit paired with 395.0-397 MHz. PPDR on a tuning range basis in 380-470 MHz range
387 MHz - 390 MHz				
FIXED	MOBILE		Defence systems	
MOBILE		**PSE1**		
Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255		**PSE6**	PMR/PAMR	Digital land mobile PMR/PAMR. Mobile station transmit paired with 397.0-399.9 MHz. PPDR on a tuning range basis in 380-470 MHz range
390 MHz - 395 MHz				
FIXED	MOBILE		Defence systems	PPDR sharing with defence applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
MOBILE	5.254 **PSE1**		
5.254	**PSE6**	PPDR	Within the bands 384.8-385.0 and 394.8-395.0 MHz for AGA, 384.750-384.800 MHz and 394.750-394.800 MHz may be used as preferred extension bands. Within the bands 380-380.15 and 390-390.15 MHz for DMO. Base station transmit paired with 380-385 MHz. PPDR sharing with defence applications. PPDR on a tuning range basis in 380-470 MHz range
395 MHz - 399.9 MHz			
FIXED	MOBILE	Defence systems	
MOBILE	5.254 **PSE1**		
5.254	**PSE6**	PMR/PAMR	Digital land mobile PMR/PAMR. Base station transmit paired with 385.0-389.9 MHz.PPDR on a tuning range basis in 380-470 MHz range
399.9 MHz - 400.05 MHz			
MOBILE SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	MOBILE SATELLITE(Earth-to-space) 5.209 5.220	MSS Earth stations	
		PPDR	
400.05 MHz - 400.15 MHz			
STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)	PPDR	
5.261	**FIXED 5.262**		
5.262	**MOBILE 5.262**		
	5.261		
400.15 MHz - 401 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	MSS Earth stations	Non-geostationary
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209	MOBILE SATELLITE (space-to-Earth) 5.208A 5.208B 5.209		
SPACE RESEARCH (space-to-Earth) 5.263	SPACE RESEARCH (space-to-Earth) 5.263	MSS Earth stations	
Space Operation (space-to-Earth)	SPACE OPERATION (space-to-Earth)		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.262	**FIXED 5.262**		
5.264	**MOBILE 5.262**	PPDR	
	5.264		
		Sondes	
		Weather satellites	
401 MHz - 402 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Active medical implants	ULP-AMI within the band 401-406 MHz
SPACE OPERATION (space-to-Earth)	EARTH EXPLORATION-SATELLITE (Earth-to-space)		
EARTH EXPLORATION-SATELLITE (Earth-to-space)		Sondes	
	METEOROLOGICAL-SATELLITE (Earth-to-space)		
METEOROLOGICAL-SATELLITE (Earth-to-space)	5.264A	Weather satellites	Data collection platform telemetry
Fixed	5.264B		
Mobile except aeronautical mobile			
5.264A			
5.264B			
402 MHz - 403 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Active medical implants	ULP-AMI within the band 401-406 MHz
EARTH EXPLORATION-SATELLITE (Earth-to-space)	EARTH EXPLORATION-SATELLITE (Earth-to-space)		
		Sondes	
METEOROLOGICAL-SATELLITE (Earth-to-space)	METEOROLOGICAL-SATELLITE (Earth-to-space)		
Fixed	5.264A	Weather satellites	Data collection platform telemetry
Mobile except aeronautical mobile	5.264B		
5.264A			
5.264B			
403 MHz - 406 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Active medical implants	ULP-AMI within the band 401-406 MHz
Fixed	5.265		
Mobile except aeronautical mobile			
5.265		Sondes	
406 MHz - 406.1 MHz			
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	EPIRBs	Band only available for distress and safety purposes
5.265	5.265		
5.266	5.266		
5.267	5.267		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
406.1 MHz - 410 MHz			
FIXED	**LAND MOBILE**	Land military systems	
MOBILE except aeronautical mobile	RADIO ASTRONOMY		
RADIO ASTRONOMY	5.149 **PSE1**	Maritime military systems	
5.149	5.265		
5.265		PMR/PAMR	Single frequency applications. PPDR on a tuning range basis in 380-470 MHz range
		Radio astronomy	Continuum observations, VLBI
410 MHz - 420 MHz			
FIXED	MOBILE except aeronautical mobile	Land military systems	
MOBILE except aeronautical mobile	**PSE1**		
SPACE RESEARCH (space-to-space) 5.268		Maritime military systems	
		PMR/PAMR	Mobile station transmit paired with 420-430 MHz.
		PPDR	BB-PPDR within 410-415 MHz / 420-425 MHz, 411-416 MHz / 421-426 MHz and 412-417 MHz / 422-427 MHz. PPDR on a tuning range basis in 380-470 MHz range.

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
420 MHz - 430 MHz			
FIXED **MOBILE except aeronautical mobile** **Radiolocation** **5.269** **5.270** **5.271**	MOBILE except aeronautical mobile Radiolocation **PSE1** **PSE4**	Land military systems Maritime military systems PMR/PAMR PPDR Radiolocation (military)	Base station transmit paired with 410-420 MHz. BB-PPDR within 410-415 MHz / 420-425 MHz, 411-416 MHz / 421-426 MHz and 412-417 MHz / 422-427 MHz. PPDR on a tuning range basis in 380-470 MHz range
430 MHz - 432 MHz			
AMATEUR **RADIOLOCATION** **5.271** **5.274** **5.275** **5.276** **5.277**	AMATEUR RADIOLOCATION **FIXED 5.276** **MOBILE except aeronautical mobile 5.276** 5.275 **PSE1** 5.277	Amateur Radiolocation (military) ULP-WMCE	Within the band 430-440 MHz Within the band 430-440 MHz
432 MHz - 433.05 MHz			
AMATEUR **RADIOLOCATION** **Earth exploration-satellite (active) 5.279A** **5.138**	AMATEUR RADIOLOCATION **FIXED 5.276** **MOBILE except aeronautical mobile 5.276**	Active sensors (satellite)	The use of this band by sensors in the EESS (active) shall be in accordance with Recommendation ITU-R SA 1260-1

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.271	Earth exploration-satellite (active) 5.279A	Amateur	Within the band 430-440 MHz
5.276	5.277 **PSE1**		
5.277		Radiolocation (military)	
5.280			
5.281		ULP-WMCE	Within the band 430-440 MHz
433.05 MHz - 434.79 MHz			
AMATEUR	AMATEUR	Active sensors (satellite)	The use of this band by sensors in the EESS (active) shall be in accordance with Recommendation ITU-R SA 1260-1
RADIOLOCATION	RADIOLOCATION		
Earth exploration-satellite (active) 5.279A	**FIXED 5.276**		
5.138	**MOBILE except aeronautical mobile 5.276**		
5.271	Earth exploration-satellite (active) 5.279A	Amateur	Within the band 430-440 MHz
5.276	Land Mobile		
5.277	5.138 **PSE1**	ISM	
5.280	5.277		
5.281	5.280	Non-specific SRDs	
		Radiolocation (military)	
		ULP-WMCE	Within the band 430-440 MHz
434.79 MHz - 435 MHz			
AMATEUR	AMATEUR	Active sensors (satellite)	The use of this band by sensors in the EESS (active) shall be in accordance with Recommendation ITU-R SA 1260-1
RADIOLOCATION	AMATEUR-SATELLITE		
Earth exploration-satellite (active) 5.279A	RADIOLOCATION		
5.271	**FIXED 5.276**		
5.276	**MOBILE except aeronautical mobile 5.276**	Amateur	Within the band 430-440 MHz
5.277	Earth exploration-satellite (active) 5.279A		
5.280	5.277 **PSE1**	Amateur-satellite	Amateur Satellite Service restricted to 435-438 MHz
5.282			
		Radiolocation (military)	
		ULP-WMCE	Within the band 430-440 MHz
435 MHz - 438 MHz			
AMATEUR	AMATEUR	Active sensors (satellite)	The use of this band by sensors in the EESS (active) shall be in accordance with Recommendation ITU-R SA 1260-1
RADIOLOCATION	AMATEUR-SATELLITE		
Earth exploration-satellite (active) 5.279A	RADIOLOCATION		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.271	**FIXED 5.276**		
5.276	Earth exploration-satellite (active) 5.279A	Amateur	Within the band 430-440 MHz
5.277	5.277 **PSE1**		
5.280	5.282	Amateur-satellite	Amateur Satellite Service restricted to 435-438 MHz
5.282		Radiolocation (military)	
		ULP-WMCE	Within the band 430-440 MHz
438 MHz - 440 MHz			
AMATEUR	AMATEUR	Amateur	Within the band 430-440 MHz
RADIOLOCATION	RADIOLOCATION		
5.271	**FIXED 5.276**	Radiolocation (military)	
5.274	**MOBILE except aeronautical mobile 5.276**		
5.275	5.277 **PSE1**	ULP-WMCE	Within the band 430-440 MHz
5.276	**PSE32**		
5.277		PMR/PAMR	Oslo Interim Agreement II, 28.09.1995, Art. 36, p. B5, Schedule 5, No. 6.2, p. 4. 438.5 - 440 MHz.
5.283			
440 MHz - 450 MHz			
FIXED	MOBILE except aeronautical mobile	Land military systems	
MOBILE except aeronautical mobile	Radiolocation		
Radiolocation	**PSE1**	Maritime military systems	
5.269	**PSE4**		
5.270		On-site paging	Call-out & answer-back
5.271			
5.284		PMR 446	PMR446 in 446.0-446.2 MHz
5.285			
5.286		PMR/PAMR	Single frequency operation. PPDR on a tuning range basis in 380-470 MHz range . Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
		Radiolocation (military)	

ITU RR Region 1 Allocations	*National Allocations*		*Applications*	*Notes*
450 MHz - 455 MHz				
FIXED	MOBILE		On-site paging	Call-out & answer-back
MOBILE 5.286AA		**PSE4**		
5.209		**PSE24**	PMR/PAMR	Mobile station transmit paired with 460-465 MHz. Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
5.271				
5.286				
5.286A				
5.286B				
5.286C				
5.286D				
5.286E				
			PPDR	BB-PPDR within 450.5-456.0 MHz /460.5-466.0 MHz and 452.0-457.5 MHz / 462.0-467.5 MHz. PPDR on a tuning range basis in 380-470 MHz range
455 MHz - 456 MHz				
FIXED	MOBILE		On-site paging	Call-out & answer-back
MOBILE 5.286AA		**PSE4**		
5.209		**PSE24**	PMR/PAMR	Mobile station transmit paired with 465-466 MHz. Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
5.271				
5.286A				
5.286B				
5.286C				
5.286E				
			PPDR	BB-PPDR within 450.5-456.0 MHz /460.5-466.0 MHz and 452.0-457.5 MHz / 462.0-467.5 MHz. PPDR on a tuning range basis in 380-470 MHz range
456 MHz - 459 MHz				
FIXED	MOBILE		Land mobile	Existing public cellular networks
MOBILE 5.286AA	5.287	**PSE4**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.271 **5.287** **5.288**	**PSE24**	On-board communications	Within 457.5125-457.5875 MHz and 467.5125-467.5875 MHz
		On-site paging	Call-out & answer-back
		PMR/PAMR	Mobile station transmit paired with 466-469 MHz. Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
		PPDR	BB-PPDR within 450.5-456.0 MHz /460.5-466.0 MHz and 452.0-457.5 MHz / 462.0-467.5 MHz. PPDR on a tuning range basis in 380-470 MHz range.
459 MHz - 460 MHz			
FIXED **MOBILE 5.286AA** **5.209** **5.271** **5.286A** **5.286B** **5.286C** **5.286E**	MOBILE **PSE4**	Land mobile	Existing public cellular networks
		On-site paging	Call-out & answer-back
		PMR/PAMR	Mobile station transmit paired with 469-470 MHz. Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
460 MHz - 470 MHz			
FIXED **MOBILE 5.286AA**	MOBILE 5.287 **PSE4**	Land mobile	Existing public cellular networks

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Meteorological-satellite (space-to-Earth)	5.289 **PSE24**	Meteorological aids (military)	
5.287			
5.288		On-board communications	Within 457.5125-457.5875 MHz and 467.5125-
5.289			
5.290		On-site paging	Call-out & answer-back
		PMR/PAMR	Base station transmit paired with 450-460 MHz. BB-PPDR. Wide area paging on a tuning range basis in 440-470 MHz such as NP2M
		PPDR	BB-PPDR within 450.5-456.0 MHz /460.5-466.0 MHz and 452.0-457.5 MHz / 462.0-467.5 MHz. PPDR on a tuning range basis in 380-470 MHz range.
		Space research	Allocation to EESS is via RR 5.289. Data collection platform telecommand. Geographical sharing with other services
470 MHz - 582 MHz			
BROADCASTING	BROADCASTING	Broadcasting (terrestrial)	Geneva Agreement 2006. TV Broadcasting
5.149	**Land Mobile 5.296**		
5.291A	**Fixed 5.294**	PMSE	Audio links
5.294	5.149		
5.296	5.306		
5.304		Radio microphones and ALD	Within the band 470-789 MHz on a tuning range basis
5.306			
5.312			
		Wind profilers	Limited to the band 470-494 MHz. Geographical sharing with other services
582 MHz - 694 MHz			
BROADCASTING	BROADCASTING	Broadcasting (terrestrial)	Geneva Agreement 2006. TV Broadcasting
5.149	**Land Mobile 5.296**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.291A	**Fixed 5.300**	PMSE	Audio links
5.294	**Mobile except aeronautical mobile 5.300**		
5.296	5.149		
5.300	5.306	Radio astronomy	Continuum observations, VLBI, 608-614 MHz
5.304			
5.306			
5.312		Radio microphones and ALD	Within the band 470-789 MHz on a tuning range basis
		Wind profilers	Limited to the band 470-494 MHz. Geographical sharing with other services
694 MHz - 790 MHz			
MOBILE except aeronautical mobile 5.300 5.312A 5.317A	**MOBILE except aeronautical mobile 5.300 5.312A 5.317A**	Broadcasting (terrestrial)	Geneva Agreement 2006 TV Broadcasting
BROADCASTING	**BROADCASTING**		
5.300	**Fixed 5.300**	MFCN	
5.312	**PSE7**		
		PMSE	Audio links
		PPDR	BB-PPDR options in 698-703/753-758 MHz, 703-733/758-788 MHz and 733-736/788-791 MHz
		Radio microphones and ALD	Within the band 470-789 MHz on a tuning range basis
790 MHz - 862 MHz			
FIXED	MOBILE except aeronautical mobile 5.316B 5.317A	-	Geneva Agreement 2006
MOBILE except aeronautical mobile 5.316B 5.317A	**PSE7**	MFCN	
BROADCASTING			
5.312			
5.319		PPDR	BB-PPDR options in 698-703/753-758 MHz, 703-733/758-788 MHz and 733-736/788-791 MHz
		Radio microphones and ALD	Within the band 823-832 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
862 MHz - 870 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **5.319** **5.323**	**MOBILE** 5.317A **PSE1**	-	This band is identified for IMT in the RRs.
		Alarms	Within the band 868.6-869.700 MHz
		Land military systems	
		Maritime military systems	
		Non-specific SRDs	Within the band 862-876 MHz
		RFID	Within the band 865-868 MHz
		Radio microphones and ALD	Within the band 863-865 MHz
		Tracking, tracing and data acquisition	Within the band 865-868 MHz
		Wideband data transmission systems	Within the band 863-868 MHz
870 MHz - 876 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **5.319** **5.323**	**MOBILE** 5.317A **PSE1**	-	This band is identified for IMT in the RRs.
		FRMCS	Within the band 874.4-880.0 MHz and 919.4-925.0 MHz
		Land military systems	The bands 870-876 MHz and 915-921 MHz are used for land military systems, specifically for unmanned systems.If they will be in civil use, shared use of the bands should be considered on a national basis. Other sub-bands within the tuning range 610-960 MHz may also be used on a national basis according to the national requirements
		Maritime military systems	
		Non-specific SRDs	Within the band 863-876 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Tracking, tracing and data acquisition	Within the band 870-875.6 MHz for Metropolitan/Rural Area Networks
876 MHz - 880 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **5.319** **5.323**	**MOBILE** 5.317A **PSE1**	- FRMCS GSM-R Land military systems Maritime military systems	This band is identified for IMT in the RRs. Within the band 874.4-880.0 MHz and 919.4-925.0 MHz Within the band 876-880 MHz paired with 921-925 MHz. Railway systems
880 MHz - 890 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **5.319** **5.323**	**MOBILE** 5.317A **PSE8** **PSE9**	GSM IMT MCV	Within the band 880-890 MHz paired with 925.935 MHz
890 MHz - 915 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **Radiolocation** **5.323**	**MOBILE** 5.317A Radiolocation **PSE1** **PSE8** **PSE9**	GSM IMT Land military systems MCV Maritime military systems	Within the band 890-915 MHz paired with 935-960 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
915 MHz - 921 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **Radiolocation** **5.323**	**MOBILE** 5.317A Radiolocation **PSE1**	-	The band 915-925 MHz is identified for IMT in the RRs
		FRMCS	Within the band 874.4-880.0 MHz and 919.4-925.0 MHz
		Land military systems	The bands 870-876 MHz and 915-921 MHz are used for land military systems, specifically for unmanned systems. If they will be in civil use, shared use of the bands should be considered on a national basis. Other sub-bands within the tuning range 610-960 MHz may also be used on a national basis according to the national requirements
		Maritime military systems	
		Non-specific SRDs	
		RFID	
921 MHz - 925 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **Radiolocation** **5.323**	**MOBILE** 5.317A Radiolocation **PSE1**	-	The band 915-925 MHz is identified for IMT in the RRs
		FRMCS	Within the band 874.4-880.0 MHz and 919.4-925.0 MHz
		GSM-R	Within the bands 876-880 MHz paired with 921-925 MHz
		Land military systems	
		Maritime military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
925 MHz - 942 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **Radiolocation** **5.323**	**MOBILE** 5.317A Radiolocation **PSE1** **PSE8** **PSE9**	GSM IMT Land military systems MCV Maritime military systems	Within the bands 935-960 MHz paired with 890-915 MHz
942 MHz - 960 MHz			
FIXED **MOBILE except aeronautical mobile 5.317A** **BROADCASTING 5.322** **5.317A** **5.323**	**MOBILE** 5.317A **PSE8** **PSE9**	GSM IMT MCV	Base station transmit paired with 897-915 MHz
960 MHz - 1 164 MHz			
AERONAUTICAL MOBILE (R) 5.327A **AERONAUTICAL RADIONAVIGATION 5.328** **5.328AA**	AERONAUTICAL MOBILE (R) 5.327A **AERONAUTICAL MOBILE-SATELLITE(R)** AERONAUTICAL RADIONAVIGATION 5.328 5.328AA **PSE1**	Aeronautical Aeronautical military systems	Including DME and SSR Military use includes JTIDS/MIDS and TACAN within 108.7-1092.3 MHz
1 164 MHz - 1 215 MHz			
AERONAUTICAL RADIONAVIGATION 5.328 **RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B** **5.328A**	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A **PSE1**	Aeronautical military systems Aeronautical navigation GALILEO	Military use includes JTIDS/MIDS Within the band 1164-1214 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		GLONASS	Within the band 1190.3-1213.8 MHz
		GNSS Repeater	Within the band 1164-1300 MHz
		Satellite systems (military)	
1 215 MHz - 1 240 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Active sensors (satellite)	
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A	GLONASS	Within the band 1237.8-1253.8 MHz
SPACE RESEARCH (active)	SPACE RESEARCH (active)	GNSS Repeater	Within the band 1164-1300 MHz
5.330	**FIXED 5.330**		
5.331	**MOBILE 5.330**	GPS	Within the band 1215.6-1239.6 MHz
5.332	**RADIONAVIGATION 5.331**		
	5.332 **PSE1**	Radiolocation (civil)	Radar and Navigation systems
		Radiolocation (military)	
		Satellite systems (military)	
1 240 MHz - 1 300 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Active sensors (satellite)	
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A	Amateur	
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Amateur-satellite	Within the band 1260-1270 MHz
Amateur	**FIXED 5.330**		
5.282	**MOBILE 5.330**	GALILEO	Within the band 1260-1300 MHz
5.330	**RADIONAVIGATION 5.331**		
5.331	Amateur	GLONASS	Within the band 1237.8-1253.8 MHz
5.332	**Amateur-satellite**		
5.335	**5.282 PSE1**	GNSS Repeater	Within the band 1164-1300 MHz
5.335A	5.332 5.335A	Radiolocation (civil)	Radar and Navigation systems
		Radiolocation (military)	
		Satellite systems (military)	
		Wind profilers	Within the band 1270-1295 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 300 MHz - 1 350 MHz			
RADIOLOCATION	RADIOLOCATION	Radio astronomy	Continuum and spectral line observations (e.g. neutral hydrogen line). VLBI
AERONAUTICAL RADIONAVIGATION 5.337	AERONAUTICAL RADIONAVIGATION 5.337		
RADIONAVIGATION-SATELLITE (Earth-to-space)	RADIONAVIGATION-SATELLITE (Earth-to-space)		
5.149	5.149 **PSE1**	Radiolocation (civil)	Radar and Navigation systems
5.337A	5.337A		
		Radiolocation (military)	
		Satellite navigation systems	
		Satellite systems (military)	
1 350 MHz - 1 400 MHz			
FIXED	FIXED	Aeronautical military systems	
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION	Fixed	Low capacity fixed links
5.149	5.149 **PSE1**		
5.338	5.338A	Land military systems	
5.338A	5.339		
5.339		Maritime military systems	
		Radio astronomy	Continuum and spectral line observations (e.g. neutral hydrogen line). VLBI
		Radio microphones and ALD	
1 400 MHz - 1 427 MHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Measurement of soil moisture, salinity, ocean surface temperature, vegetation index
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340	Radio astronomy	Continuum and spectral line observations (e.g. neutral hydrogen line). VLBI
5.341	5.341		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 427 MHz - 1 429 MHz			
SPACE OPERATION (Earth-to-space)	SPACE OPERATION (Earth-to-space)		
FIXED	FIXED	Land military systems	
MOBILE except aeronautical mobile 5.341A	MOBILE except aeronautical mobile 5.341A		
5.338A	5.338A **PSE1**	MFCN	Supplemental Downlink
5.341	5.341		
		Maritime military systems	
1 429 MHz - 1 452 MHz			
FIXED	FIXED	Fixed	Low capacity fixed links
MOBILE except aeronautical mobile 5.341A	MOBILE except aeronautical mobile 5.341A		
5.338A	5.338A **PSE1**	Land military systems	
5.341	5.341		
5.342		MFCN	Supplemental Downlink
		Maritime military systems	
1 452 MHz - 1 492 MHz			
FIXED	MOBILE except aeronautical mobile 5.346	MFCN	Supplemental Downlink
MOBILE except aeronautical mobile 5.346	BROADCASTING		
BROADCASTING	**Fixed**	T-DAB	Within the band 1452.0-1479.5 MHz
BROADCASTING-SATELLITE 5.208B	5.341		
5.341	5.345		
5.342			
5.345			
1 492 MHz - 1 518 MHz			
FIXED	FIXED	Fixed	Low capacity fixed links
MOBILE except aeronautical mobile 5.341A	MOBILE except aeronautical mobile 5.341A		
5.341	5.341 **PSE1**	Land military systems	
5.342			
		MFCN	Supplemental Downlink
		Maritime military systems	
		Radio microphones and ALD	On a tuning range basis

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 518 MHz - 1 525 MHz			
FIXED	FIXED	Fixed	Unidirectional fixed links
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A	IMT-2000 satellite component	
5.341	5.341 **PSE1**		
5.342		Land military systems	
		MSS Earth stations	
		Maritime military systems	
		Radio microphones and ALD	On a tuning range basis
1 525 MHz - 1 530 MHz			
FIXED	FIXED	Fixed	Unidirectional fixed links
MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A	IMT-2000 satellite component	
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
Earth exploration-satellite	5.341		
Mobile except aeronautical mobile 5.349	5.351	MSS Earth stations	
5.341	5.352A		
5.342	5.354		
5.350			
5.351			
5.352A			
5.354			
1 530 MHz - 1 535 MHz			
SPACE OPERATION (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.353A 5.351A	IMT-2000 satellite component	
MOBILE-SATELLITE (space-to-Earth) 5.208B 5.353A 5.351A	SPACE OPERATION (space-to-Earth)		
Earth exploration-satellite	Earth exploration-satellite	MSS Earth stations	Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications
Fixed	Fixed		
Mobile except aeronautical mobile	Mobile except aeronautical mobile		
5.341	5.341		
5.342	5.351		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.351	5.354		
5.354			
1 535 MHz - 1 540 MHz			
MOBILE-SATELLITE (space-to-Earth) **5.208B**	MOBILE-SATELLITE (space-to-Earth) 5.208B	IMT-2000 satellite component	
5.351A	5.351A		
5.341	5.341		
5.351	5.351	MSS Earth stations	Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications whitin the band 1544-1545 MHz
5.353A	5.353A		
5.354	5.354		
5.356	5.356		
5.357	5.357		
5.357A	5.357A		
1 540 MHz - 1 550 MHz			
MOBILE-SATELLITE (space-to-Earth) **5.208B**	MOBILE-SATELLITE (space-to-Earth) 5.208B	IMT-2000 satellite component	
5.351A	5.351A		
5.341	**Fixed** **5.355**		
5.351	5.341	MSS Earth stations	Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications whitin the band 1544-1545 MHz
5.353A	5.351		
5.354	5.353A		
5.355	5.354		
5.356	5.356		
5.357	5.357		
5.357A	5.357A		
1 550 MHz - 1 559 MHz			
MOBILE-SATELLITE (space-to-Earth) **5.208B**	MOBILE-SATELLITE (space-to-Earth) 5.208B	IMT-2000 satellite component	
5.351A	5.351A		
5.341	**Fixed** **5.355** **5.359**		
5.351	5.341	MSS Earth stations	Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications whitin the band 1544-1545 MHz
5.353A	5.351		
5.354	5.353A		
5.355	5.354		
5.356	5.356		
5.357	5.357		
5.357A	5.357A		
5.359			
5.362A			

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 559 MHz - 1 610 MHz			
AERONAUTICAL RADIONAVIGATION **RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A** **5.341**	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.208B 5.328B 5.329A 5.341	GALILEO GLONASS GNSS Pseudolites GNSS Repeater GPS	Within the band 1559.42-1591.42 MHz Within the band 1592.9-1610.5 MHz Within the band 1563.42-1587.42 MHz
1 610 MHz - 1 610.6 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **AERONAUTICAL RADIONAVIGATION** **5.341** **5.355** **5.359** **5.364** **5.366** **5.367** **5.368** **5.369** **5.371** **5.372**	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION **RADIODETERMINATION-SATELLITE(EARTH-TO-SPACE) PSE31** **Fixed 5.355 5.359** 5.341 5.364 5.366 5.367 5.368 5.369 5.371 5.372	GLONASS IMT-2000 satellite component MSS Earth stations	Within the band 1592.9-1610.5 MHz
1 610.6 MHz - 1 613.8 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **RADIO ASTRONOMY** **AERONAUTICAL RADIONAVIGATION** **5.149** **5.341** **5.355** **5.359** **5.365** **5.364** **5.366** **5.367** **5.368** **5.369** **5.371**	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION **RADIODETERMINATION-SATELLITE (Earth-to-space) PSE31** **Fixed 5.355 5.359** 5.149 5.341 5.364 5.365 5.366 5.367 5.368 5.369	IMT-2000 satellite component MSS Earth stations Radio astronomy	Spectral line observations (e.g. hydroxyl line). VLBI

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.372	5.371 5.372		
1 613.8 MHz - 1 621.35 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **AERONAUTICAL RADIONAVIGATION** **Mobile-satellite (space-to-Earth) 5.208B** **5.341** **5.355** **5.359** **5.364** **5.366** **5.367** **5.368** **5.369** **5.371** **5.372**	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION **RADIODETERMINATION-SATELLITE (EARTH TO SPACE) PSE31** Mobile-satellite (space-to-Earth) 5.208B **Fixed 5.355 5.359** 5.341 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	IMT-2000 satellite component MSS Earth stations	
1 621.35 MHz - 1 626.50 MHz			
MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373A 5.373 **MOBILE-SATELLITE (Earth-to-space) 5.351A** **AERONAUTICAL RADIONAVIGATION** **Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth)** **5.208B** **5.341** **5.355** **5.359** **5.364** **5.365** **5.366** **5.367** **5.368** **5.369** **5.371** **5.372**	MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373A 5.373 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION **RADIODETERMINATION-SATELLITE (EARTH TO SPACE) PSE31** Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) **Fixed 5.355** 5.208B 5.341 5.359 5.364 5.365 5.365 5.366 5.367 5.368 5.369 5.371	IMT-2000 satellite component MSS Earth stations	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
	5.372		
1 626.50 MHz - 1 645.50 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **5.341** **5.351** **5.353A** **5.354** **5.355** **5.357A** **5.359** **5.374** **5.375** **5.376**	MOBILE-SATELLITE (Earth-to-space) 5.351A **Fixed 5.355** 5.341 5.351 5.359 5.353A 5.354	ALS IMT-2000 satellite component MSS Earth stations	Within 1656.5-1660.5 MHz Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications within the band 1645.5-1646.5 MHz
1 645.50 MHz - 1 646.50 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **5.341** **5.351** **5.353A** **5.354** **5.357A** **5.374** **5.375** **5.376**	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354	ALS IMT-2000 satellite component MSS Earth stations	Within 1656.5-1660.5 MHz Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications within the band 1645.5-1646.5 MHz
1 646.50 MHz - 1 660 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A **5.341** **5.351** **5.353A** **5.354** **5.355** **5.357A** **5.359** **5.362A** **5.374** **5.375** **5.376**	MOBILE-SATELLITE (Earth-to-space) 5.351A **Fixed 5.355** 5.341 5.351 5.359 5.353A 5.354	ALS IMT-2000 satellite component MSS Earth stations	Within 1656.5-1660.5 MHz Priority for GMDSS Distress, urgency and safety and for AMS(R)S categories 1 to 6 communications within the band 1645.5-1646.5 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 660 MHz - 1 660.5 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A	ALS	Within 1656.5-1660.5 MHz
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149	IMT-2000 satellite component	
5.341	5.341		
5.351	5.351		
5.354	5.354	MSS Earth stations	
5.362A	5.376A		
5.376A			
		Radio astronomy	Continuum and spectral line observations (e.g. hydroxyl line), VLBI
1 660.5 MHz - 1 668 MHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations (e.g. hydroxyl line), VLBI
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
Fixed	Fixed		
Mobile except aeronautical mobile	Mobile except aeronautical mobile		
5.149	5.149		
5.341	5.341		
5.379	5.379A		
5.379A			
1 668 MHz - 1 668.4 MHz			
MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.351A 5.379B 5.379C	IMT-2000 satellite component	
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations (e.g. hydroxyl line), VLBI
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
Fixed	Fixed		
Mobile except aeronautical mobile	Mobile except aeronautical mobile		
5.149	5.149		
5.341	5.341		
5.379	5.379A		
5.379A			
1 668.4 MHz - 1 670 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	IMT-2000 satellite component	
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Meteorology	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A		
5.379B 5.379C	5.379B 5.379C	Radio astronomy	Continuum and spectral line observations (e.g. hydroxyl line), VLBI
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
5.341	5.341		
5.379D	5.379D		
5.379E	5.379E		
1 670 MHz - 1 675 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
FIXED	METEOROLOGICAL-SATELLITE (space-to-Earth)	IMT-2000 satellite component	
METEOROLOGICAL-SATELLITE (space-to-Earth)	MOBILE		
MOBILE	MOBILE-SATELLITE (Earth-to-space) 5.351A	MSS Earth stations	
MOBILE-SATELLITE (Earth-to-space) 5.351A	5.379B		
5.379B	**Fixed**		
5.341	5.341		
5.379D	5.379D	Meteorology	
5.379E	5.379E		
5.380A	5.380A	Weather satellites	
1 675 MHz - 1 690 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Land military systems	
FIXED	FIXED		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	Maritime military systems	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.341	5.341 **PSE1**	Meteorological aids (military)	
		Sondes	Meteorological radiosondes
		Weather satellites	Data collection platform
1 690 MHz - 1 700 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Land military systems	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
Fixed	**FIXED 5.382**	Maritime military systems	
Mobile except aeronautical mobile	**MOBILE except aeronautical mobile 5.382**		
5.289	5.289 **PSE1**	Meteorological aids (military)	
5.341	5.341		
5.382		Weather satellites	Data collection platform. Allocation to EESS is via RR 5.289

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 700 MHz - 1 710 MHz			
FIXED	FIXED	Land military systems	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	**Mobile except aeronautical mobile**	Maritime military systems	
5.289	5.289 **PSE1**		
5.341	5.341	Meteorological aids (military)	
		Weather satellites	Data collection platform. Allocation to EESS is via RR 5.289
1 710 MHz - 1 785 MHz			
FIXED	FIXED	GSM	
MOBILE 5.384A 5.388B	MOBILE 5.384A 5.388B		
5.149	5.149 **PSE8**		
5.341	5.341		
5.385	5.385	IMT	
5.386			
5.387			
		MCA	
		MCV	
		Radio astronomy	Spectral line observations (e.g. hydroxyl line) in 1 718.8-1 722.2 MHz , VLBI
1 785 MHz - 1 800 MHz		-	
FIXED	FIXED		This band is identified for IMT in the RRs
MOBILE 5.384A 5.388B	MOBILE 5.384A 5.388B		
5.386	**PSE1**	Land military systems	
5.387			
		Land mobile	Mobile applications
		Radio microphones and ALD	Within the band 1785-1804.8 MHz
1 800 MHz - 1 805 MHz			
FIXED	MOBILE 5.384A 5.388B	-	This band is identified for IMT in the RRs
MOBILE 5.384A 5.388B	**Fixed**		
5.386	**PSE1**	Land military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio microphones and ALD	Within the band 1785-1804.8 MHz
1 805 MHz - 1 880 MHz			
FIXED **MOBILE 5.384A 5.388B** **5.386**	FIXED MOBILE 5.384A 5.388B **PSE8**	GSM	
		IMT	
		MCA	
		MCV	
1 880 MHz - 1 885 MHz			
FIXED **MOBILE 5.384A 5.388B**	MOBILE 5.384A 5.388B **Fixed**	DECT	
1 885 MHz - 1 900 MHz			
FIXED **MOBILE 5.388A 5.388B** **5.388**	MOBILE 5.388A 5.388B **Fixed** 5.388	DECT	
1 900 MHz - 1 930 MHz			
FIXED **MOBILE 5.388A 5.388B** **5.388**	MOBILE 5.388A 5.388B **PSE7** **Fixed** 5.388 **PSE8**	- MCA MCV MFCN	This band can also be used by fixed service on a national basis Within the band 1920-1980 MHz Within the band 1920-1980 MHz Within the band 1920-1980 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
1 930 MHz - 1 970 MHz			
FIXED **MOBILE 5.388A 5.388B** **5.388**	MOBILE 5.388A 5.388B **PSE7** **Fixed** 5.388 **PSE8**	-	This band can also be used by fixed service on a national basis
		MCA	Within the band 1920-1980 MHz
		MCV	Within the band 1920-1980 MHz
		MFCN	Within the band 1920-1980 MHz
1 970 MHz - 1 980 MHz			
FIXED **MOBILE 5.388A 5.388B** **5.388**	MOBILE 5.388A 5.388B **PSE7** **Fixed** 5.388 **PSE8**	-	This band can also be used by fixed service on a national basis
		MCA	Within the band 1920-1980 MHz
		MCV	Within the band 1920-1980 MHz
		MFCN	Within the band 1920-1980 MHz
1 980 MHz - 2 010 MHz			
FIXED **MOBILE** **MOBILE-SATELLITE (Earth-to-space) 5.351A** **5.388** **5.389A** **5.389B** **5.389F**	MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389F	-	This band can also be used by fixed service on a national basis
		MSS Earth stations	The mobile satellite systems using this band may incorporate a complementary Ground Component (CGC)
2 010 MHz - 2 025 MHz			
FIXED **MOBILE 5.388A 5.388B** **5.388**	MOBILE 5.388A 5.388B **Fixed**	-	This band can also be used by fixed service on a national basis
		PMSE	Portable or mobile wireless video links and cordless cameras

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 025 MHz - 2 110 MHz			
SPACE OPERATION (Earth-to-space) (space-to-space)	SPACE OPERATION (Earth-to-space) (space-to-space)	Aeronautical military systems	
EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space)	EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space)	Fixed	
FIXED	FIXED	Land military systems	
MOBILE 5.391	MOBILE 5.391		
SPACE RESEARCH (Earth-to-space) (space-to-space)	SPACE RESEARCH (Earth-to-space) (space-to-space)	Maritime military systems	
5.392	5.392 **PSE1** **PSE12**	PMSE	Portable or mobile wireless video and cordless cameras
		Space research	Satellite payload and platform telecommand
		Telemetry/Telecommand (military)	
2 110 MHz - 2 120 MHz			
FIXED	MOBILE 5.388A 5.388B	-	Satellite payload and platform telecommand for space research (deep space). This band can also be used by fixed service on a national basis
MOBILE 5.388A 5.388B	SPACE RESEARCH (deep space) (Earth-to-space)		
SPACE RESEARCH (deep space) (Earth-to-space)	**Fixed**		
5.388	5.388 **PSE8**		
		MCA	Within the band 2110-2170 MHz
		MCV	Within the band 2110-2170 MHz
		MFCN	Within the band 2110-2170 MHz
2 120 MHz - 2 170 MHz			
FIXED	MOBILE 5.388A 5.388B	-	This band can also be used by fixed service on a national basis
MOBILE 5.388A 5.388B	**Fixed**		
5.388	5.388 **PSE8**		
		MCA	Within the band 2110-2170 MHz
		MCV	Within the band 2110-2170 MHz
		MFCN	Within the band 2110-2170 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 170 MHz - 2 200 MHz			
FIXED	MOBILE-SATELITE (space-to-Earth) 5.351A	-	This band can also be used by fixed service on a national basis
MOBILE	MOBILE		
MOBILE-SATELITE (space-to-Earth) 5.351A	**Fixed**		
5.388	5.388	MSS Earth stations	The mobile satellite systems using this band may incorporate a Complementary Ground Component (CGC)
5.389A	5.389A		
5.389F	5.389F		
2 200 MHz - 2 290 MHz			
SPACE OPERATION (space-to-Earth) (space-to-space)	SPACE OPERATION (space-to-Earth) (space-to-space)	Aeronautical military systems	
EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space)	EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space)	Fixed	
FIXED	FIXED	Land military systems	
MOBILE 5.391	MOBILE 5.391		
SPACE RESEARCH (space-to-Earth) (space-to-space)	SPACE RESEARCH (space-to-Earth) (space-to-space)	Maritime military systems	
5.392	5.392 **PSE1** **PSE12**	PMSE	Portable or mobile wireless video and cordless cameras
		Radio astronomy	Continuum observations, VLBI (used by SRS)
		Space research	EESS Satellite payload and platform telemetry
		Telemetry/Telecommand (military)	
2 290 MHz - 2 300 MHz			
FIXED	FIXED	Land mobile	Mobile applications
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
SPACE RESEARCH (deep space) (space-to-Earth)	SPACE RESEARCH (deep space) (space-to-Earth)	PMSE	Portable or mobile wireless video and cordless cameras
		Space research	Satellite payload and platform telemetry for space research (deep space). Continuum observations, VLBI (used by SRS)

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 300 MHz - 2 400 MHz			
FIXED	FIXED	Aeronautical military systems	
MOBILE 5.384A	MOBILE 5.384A		
Amateur	Amateur	Aeronautical telemetry	Parts of the band are used for aeronautical telemetry on a national basis
Radiolocation	Radiolocation		
5.150	**PSE1**		
5.282			
5.395		Amateur	Within the band 2300-2450 MHz
		Land military systems	
		MFCN	Shared use of spectrum envisaged
		Maritime military systems	
		PMSE	Portable or mobile wireless video and cordless cameras
		Telemetry/Telecommand (military)	
2 400 MHz - 2 450 MHz			
FIXED	FIXED	Amateur	Within the band 2300-2450 MHz
MOBILE	MOBILE		
Amateur	Amateur	Amateur-satellite	
Radiolocation	**Amateur-satellite**		
5.150	Radiolocation	ISM	
5.282	5.150		
	5.282	Non-specific SRDs	Within the band 2400.0-2483.5 MHz
		PMSE	Portable or mobile wireless video and cordless cameras
2 450 MHz - 2 483.5 MHz			
FIXED	FIXED	ISM	
MOBILE	MOBILE		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Radiolocation **5.150**	5.150	Non-specific SRDs	Within the band 2400.0-2483.5 MHz
		PMSE	Portable or mobile wireless video and cordless cameras
		RFID	Within the band 2446-2454 MHz
		Radiodetermination applications	Within the band 2400.0-2483.5 MHz
		Wideband data transmission systems	Within the band 2400-2483.5 MHz
2 483.5 MHz - 2 500 MHz			
FIXED **MOBILE** **MOBILE-SATELLITE (space-to-Earth) 5.351A** **RADIODETERMINATION-SATELLITE (space-to-Earth)** **5.398** **Radiolocation 5.398A** **5.150** **5.399** **5.401** **5.402**	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.150 5.399 5.402	Active medical implants	Low Power Active medical implants and associated peripherals
		IMT-2000 satellite component	
		ISM	
		Land mobile	Mobile applications
		MBANS	
		MSS Earth stations	
		PMSE	Portable or mobile wireless video and cordless cameras
2 500 MHz - 2 520 MHz			
FIXED 5.410 **MOBILE except aeronautical mobile 5.384A** **5.412**	FIXED 5.410 MOBILE except aeronautical mobile 5.384A	MCV	Within the bands 2500-2570 MHz and 2620-2690 MHz
		MFCN	Within the band 2500-2690 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 520 MHz - 2 655 MHz			
FIXED 5.410 **MOBILE except aeronautical mobile 5.384A** **BROADCASTING-SATELLITE 5.413 5.416** **5.339** **5.412** **5.418B** **5.418C**	FIXED 5.410 MOBILE except aeronautical mobile 5.384A **PSE7** 5.339 **PSE11** 5.418B 5.418C	MCV MFCN 	Within the bands 2500-2570 MHz and 2620-2690 MHz Within the band 2500-2690 MHz Within the band 2500-2690 MHz
2 655 MHz - 2 670 MHz			
FIXED 5.410 **MOBILE except aeronautical mobile 5.384A** **BROADCASTING-SATELLITE 5.208B 5.413 5.416** **Earth exploration-satellite (passive)** **Radio astronomy** **Space research (passive)** **5.149** **5.412**	FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 **PSE11** 5.208B	MCV MFCN Radio astronomy	Within the bands 2500-2570 MHz and 2620-2690 MHz Within the band 2500-2690 MHz Continuum observations, VLBI
2 670 MHz - 2 690 MHz			
FIXED 5.410 **MOBILE except aeronautical mobile 5.384A** **Earth exploration-satellite (passive)** **Radio astronomy** **Space research (passive)** **5.149** **5.412**	FIXED MOBILE except aeronautical mobile 5.384A Radio astronomy 5.149	MCV MFCN Radio astronomy	Within the bands 2500-2570 MHz and 2620-2690 MHz Within the band 2500-2690 MHz Continuum observations, VLBI
2 690 MHz - 2 700 MHz			
EARTH EXPLORATION-SATELLITE (passive) **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **5.340** **5.422**	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) **FIXED 5.422** **MOBILE except aeronautical mobile 5.422** 5.340	Passive sensors (satellite) Radio astronomy	 Continuum observations, VLBI

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
2 700 MHz - 2 900 MHz			
AERONAUTICAL RADIONAVIGATION 5.337 **Radiolocation** **5.423** **5.424**	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 **PSE1**	Aeronautical navigation PMSE Radiolocation (civil) Radiolocation (military) Weather radar	Radar and navigation systems Portable or mobile wireless video and cordless cameras
2 900 MHz - 3 100 MHz			
RADIOLOCATION 5.424A **RADIONAVIGATION 5.426** **5.425** **5.427**	RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.423 **PSE1** 5.427	Radiolocation (civil) Radiolocation (military)	Radar and navigation systems
3 100 MHz - 3 300 MHz			
RADIOLOCATION **Earth exploration-satellite (active)** **Space research (active)** **5.149** **5.428**	RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 **PSE1**	Active sensors (satellite) Radio astronomy Radiolocation (civil) Radiolocation (military) UWB applications	 Spectral line observations (e.g. methine line) Radars Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
3 300 MHz - 3 400 MHz			
RADIOLOCATION **5.149** **5.429** **5.429A** **5.429B**	RADIOLOCATION **FIXED 5.429** **MOBILE 5.429** 5.149 **PSE1** 5.429B	Radio astronomy Radiolocation (civil)	Spectral line observations (e.g. methine line) Upper limit for airborne radars is 3410 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.430			
		Radiolocation (military)	Upper limit for airborne radars is 3410 MHz
		UWB applications	Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
3 400 MHz - 3 600 MHz			
FIXED	FIXED	Amateur	Within the band 3400-3410 MHz
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile 5.430A	MOBILE except aeronautical mobile 5.430A	FSS Earth stations	
Radiolocation	**PSE7**		
5.431	Radiolocation	MFCN	Within the band 3400-3800 MHz
	Amateur		
	PSE1		
		MFCN	
		PMSE	For coordinated Wireless Video Links applications for occasional use. In some countries the mobile service may be on secondary basis
		Radiolocation (civil)	Upper limit for airborne radars is 3410 MHz
		Radiolocation (military)	Upper limit for airborne radars is 3410 MHz
		UWB applications	Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
3 600 MHz - 4 200 MHz			
FIXED	FIXED	-	The mobile service may be on secondary basis
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
Mobile	**MOBILE PSE7**	ESV	Within the band 3700-4200 MHz
	PSE20		
		FSS Earth stations	Priority for civil networks
		Fixed	Medium/high capacity fixed

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		MFCN	Within the band 3400-3800 MHz
		MFCN	Within the band 3400-3800 MHz
		UWB applications	Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
4 200 MHz - 4 400 MHz			
AERONAUTICAL MOBILE (R) 5.436	AERONAUTICAL MOBILE (R) 5.436	Aeronautical military systems	
AERONAUTICAL RADIONAVIGATION 5.438	AERONAUTICAL RADIONAVIGATION 5.438		
5.437	5.437 **PSE1**	Altimeters	
5.439	5.440		
5.440		Passive sensors (satellite)	For sea surface temperature measurements
		UWB applications	Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
		WAIC	
4 400 MHz - 4 500 MHz			
FIXED	FIXED	Aeronautical military systems	
MOBILE 5.440A	MOBILE		
	PSE1	Land military systems	
	PSE15		
		Maritime military systems	
		PMSE	Mobile applications for coordinated Wireless Video Links applications for occasional use
		Telemetry/Telecommand (military)	
		UWB applications	Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
4 500 MHz - 4 800 MHz			
FIXED **FIXED-SATELLITE (space-to-Earth) 5.441** **MOBILE 5.440A**	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE **PSE1** **PSE15**	Aeronautical military systems FSS Earth stations Land military systems Maritime military systems PMSE Radiodetermination applications Telemetry/Telecommand (military) UWB applications	Mobile applications for coordinated Wireless Video Links applications for occasional use Within the band 4500-7000 MHz for TLPR application Generic UWB. Location Tracking Type 2 (LT2). Location Application for Emergency Services (LAES)
4 800 MHz - 4 990 MHz			
FIXED **MOBILE 5.440A 5.441A 5.441B 5.442** **Radio astronomy** **5.149** **5.339** **5.443**	FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 **PSE1** 5.339 **PSE15**	Aeronautical military systems BBDR Land military systems Maritime military systems PMSE Passive sensors (satellite) Radio astronomy	Within the band 4940-4990 MHz. Optinal band for BBDR within the PPDR uses Mobile applications for coordinated Wireless Video Links applications for occasional use Space research and EESS (passive) above 4950 MHz Continuum and spectral line observations, (e.g.

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
			formaldehyde line), VLBI
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
4 990 MHz - 5 000 MHz			
FIXED **MOBILE except aeronautical mobile** **RADIO ASTRONOMY** **Space research (passive)** **5.149**	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 **PSE1** **PSE15**	Aeronautical military systems Land military systems Maritime military systems	
		PMSE	Mobile applications for coordinated Wireless Video Links applications for occasional use
		Radio astronomy	Continuum observations, VLBI
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Telemetry/Telecommand (military)	
5 000 MHz - 5 010 MHz			
AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA	AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA	GALILEO	For future use by Galileo
AERONAUTICAL RADIONAVIGATION **RADIONAVIGATION-SATELLITE (Earth-to-space)**	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) **Radio astronomy** **Space research (passive)**	Radio astronomy	Continuum observation, VLBI
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Satellite navigation systems	Aeronautical Radionavigation and FSS possible
5 010 MHz - 5 030 MHz			
AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA	AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA	GALILEO	C1
AERONAUTICAL RADIONAVIGATION **RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B**	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B **Radio astronomy**	Radio astronomy	Continuum observation, VLBI
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
	Space research (passive)	Satellite navigation systems	Aeronautical Radionavigation and FSS possible
5 030 MHz - 5 091 MHz			
AERONAUTICAL MOBILE (R) 5.443C **AERONAUTICAL MOBILE-SATELLITE(R) 5.443D** **AERONAUTICAL RADIONAVIGATION** **5.444**	AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE(R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	MLS Radiodetermination applications	Aeronautical Radionavigation may be envisaged. FSS in use possible. Within the band 4500-7000 MHz for TLPR application
5 091 MHz - 5 150 MHz			
FIXED-SATELLITE (Earth-to-space) 5.444A **AERONAUTICAL MOBILE 5.444B** **AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA** **AERONAUTICAL RADIONAVIGATION** **5.444**	FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE(R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	- Radiodetermination applications	FSS is possible Within the band 4500-7000 MHz for TLPR application
5 150 MHz - 5 250 MHz			
FIXED-SATELLITE (Earth-to-space) 5.447A **MOBILE except aeronautical mobile 5.446A** **5.446B** **AERONAUTICAL RADIONAVIGATION** **5.446** **5.446C** **5.446D** **5.447** **5.447B** **5.447C**	FIXED-SATELLITE (Earth-to-space) 5.447A **MOBILE** 5.446A 5.446B 5.447 AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447B 5.447C	Aeronautical telemetry BBDR Feeder links Radio LANs Radiodetermination applications	5.446C RR Temporary use by PPDR users Feeder links for MSS. Aeronautical Radionavigation and FSS possible WAS/RLANs within the bands 5150-5350 MHz and 5470-5725 MHz Within the band 4500-7000 MHz for TLPR application
5 250 MHz - 5 255 MHz			
EARTH EXPLORATION-SATELLITE (active) **MOBILE except aeronautical mobile 5.446A** **5.447F** **RADIOLOCATION** **SPACE RESEARCH 5.447D** **5.447E** **5.448**	EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.448A **PSE1** **PSE16**	- Active sensors (satellite) Maritime radar Radio LANs	Position fixing Shipborne and VTS radar WAS/RLANs within the bands 5150-5350 MHz and

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.448A			5470-5725 MHz
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne
5 255 MHz - 5 350 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	-	Position fixing
MOBILE except aeronautical mobile 5.446A	MOBILE except aeronautical mobile 5.446A		
5.447F	5.447F	Active sensors (satellite)	
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Maritime radar	Shipborne and VTS radar
5.447E	5.448A **PSE1**		
5.448	**PSE16**	Radio LANs	WAS/RLANs within the bands 5150-5350 MHz and 5470-5725 MHz
5.448A			
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne
5 350 MHz - 5 460 MHz			
EARTH EXPLORATION-SATELLITE (active) 5.448B	EARTH EXPLORATION-SATELLITE (active) 5.448B	-	Position fixing
AERONAUTICAL RADIONAVIGATION 5.449	AERONAUTICAL RADIONAVIGATION 5.449	Active sensors (satellite)	
RADIOLOCATION 5.448D	RADIOLOCATION 5.448D		
SPACE RESEARCH (active) 5.448C	SPACE RESEARCH (active) 5.448C	Maritime radar	Shipborne and VTS radar
	PSE1		
	PSE16	Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5 460 MHz - 5 470 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	-	Position fixing
RADIOLOCATION 5.448D	RADIOLOCATION 5.448D		
RADIONAVIGATION 5.449	RADIONAVIGATION 5.449	Active sensors (satellite)	
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
5.448B	5.448B **PSE1**	Maritime radar	Shipborne and VTS radar
	PSE16	Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne
5 470 MHz - 5 570 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	-	Position fixing
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A	Active sensors (satellite)	
RADIOLOCATION 5.450B	RADIOLOCATION 5.450B		
MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION	Maritime radar	Shipborne and VTS radar
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
5.448B	5.448B **PSE1**	Radio LANs	WAS/RLANs within the bands 5150-5350 MHz and 5470-5725 MHz
5.450	**PSE16**		
5.451		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne
5 570 MHz - 5 650 MHz			
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A	-	Position fixing
RADIOLOCATION 5.450B	RADIOLOCATION 5.450B	Maritime radar	Shipborne and VTS radar
MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION		
5.450	5.452 **PSE1**	Radio LANs	WAS/RLANs within the bands 5150-5350 MHz and 5470-5725 MHz
5.451	**PSE16**		
5.452		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiodetermination applications	
		Radiolocation (military)	
		Weather radar	Ground based
5 650 MHz - 5 725 MHz			
MOBILE except aeronautical mobile 5.446A **5.450A**	MOBILE except aeronautical mobile 5.446A 5.450A	-	Position fixing
RADIOLOCATION	RADIOLOCATION	Amateur	Within the band 5650-5850 MHz
Amateur	**FIXED 5.453**		
Space research (deep space)	**MOBILE 5.453**	Amateur-satellite	Within the band 5650-5670 MHz
5.282	Amateur		
5.451	**Amateur Satellite**	Maritime radar	Shipborne and VTS radar
5.453	5.282 **PSE1**		
5.454	**PSE16**	Radio LANs	WAS/RLANs within the bands 5150-5350 MHz and 5470-5725 MHz
5.455	**PSE17**		
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		Weather radar	Ground based and airborne
5 725 MHz - 5 830 MHz			
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	Amateur	Within the band 5650-5850 MHz
RADIOLOCATION	RADIOLOCATION		
Amateur	**FIXED 5.453**	BFWA	Within the band 5725-5875 MHz
5.150	**MOBILE 5.453**		
5.451	Amateur	ISM	Within the band 5725-5875 MHz
5.453	5.150 **PSE1**		
5.455	**PSE13**	Non-specific SRDs	Within the band 5725-5875 MHz
	PSE16		
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		TTT	Within the band 5795-5805 MHz. TTT in the band 5805-5815 MHz on a national basis

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		WIA	Within the band 5725-5875 MHz
		Weather radar	Ground based and airborne
5 830 MHz - 5 850 MHz			
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	Amateur	Within the band 5650-5850 MHz
RADIOLOCATION	RADIOLOCATION		
Amateur	**FIXED 5.453**	Amateur-satellite	Within the band 5830-5850 MHz
Amateur-satellite (space-to-Earth)	**MOBILE 5.453**	BFWA	
5.150	Amateur		
5.451	Amateur-satellite (space-to-Earth)		
5.453	5.150 **PSE1**	ISM	Within the band 5725-5875 MHz
5.455	**PSE16**		
	PSE17	Non-specific SRDs	Within the band 5725-5875 MHz
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		Radiolocation (military)	
		WIA	Within the band 5725-5875 MHz
		Weather radar	Ground based and airborne
5 850 MHz - 5 925 MHz			
FIXED	FIXED	BFWA	Within the band 5725-5875 MHz
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE	DA2GC	Within the band 5855-5875 MHz
5.150	5.150		
		FSS Earth stations	Priority for civil networks
		ISM	Within the band 5725-5875 MHz
		ITS	Within the bands 5875-5935 MHz and 5855-5875 MHz. Traffic safety applications within the band 5875-5935 MHz
		MBR	Within 5852-5872 MHz and 5880-5900 MHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Non-specific SRDs	Within the band 5725-5875 MHz
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		WIA	Within the band 5725-5875 MHz
5 925 MHz - 6 700 MHz			
FIXED 5.457	FIXED	-	
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B	FIXED-SATELLITE (Earth-to-space) 5.457B	ESV	Within the band 5925-6425 MHz
	MOBILE		
MOBILE 5.457C	**Earth exploration-satellite (passive)**	FSS Earth stations	Priority for civil networks
5.149	5.149		
5.440	5.440	Fixed	Point-to-point
5.458	5.458		
		ITS	Urban rail systems only 5925–5935 MHz. Within the bands 5875-5935 MHz and 5855-5875 MHz. Traffic safety applications within the band 5875-5935 MHz. 5925-5935 for safety-related Urban Rail ITS only.
		Passive sensors (satellite)	For sea surface temperature, sea surface wind speed and soil moisture measurements
		Radio LANs	Within the band 5945 to 6425 MHz
		Radio astronomy	Spectral line observations (e.g. methanol line), VLBI.
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application and 6000-8500 MHz for LPR applications
		UWB applications	Generic UWB as well as UWB on-board aircraft
6 700 MHz - 7 075 MHz			
FIXED	FIXED	FSS Earth stations	Within the band 6725-7025 MHz. Priority for civil networks
FIXED-SATELLITE (Earth-to-space) (space-to-Earth)	FIXED-SATELLITE (Earth-to-space) (space-to-Earth)		
5.441	5.441		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
MOBILE	MOBILE	Feeder links	
5.458	**Earth exploration-satellite(passive)**		
5.458A	5.458	Fixed	Point-to-point
5.458B	5.458A		
	5.458B		
		PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Passive sensors (satellite)	For sea surface temperature, sea surface wind speed and soil moisture measurements
		Radiodetermination applications	Within the band 4500-7000 MHz for TLPR application
		UWB applications	Generic UWB as well as on-board aircraft regulation within the band 6.0-8.5 GHz
7 075 MHz - 7 145 MHz			
FIXED	FIXED	Fixed	Point-to-point
MOBILE	MOBILE		
5.458	**Earth exploration-satellite (passive)**		
5.459	5.458		
		PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Passive sensors (satellite)	For sea surface temperature, sea surface wind speed and soil moisture measurements
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		UWB applications	Generic UWB as well as on-board aircraft regulation within the band 6.0-8.5 GHz
7 145 MHz - 7 190 MHz			
FIXED	FIXED	Fixed	Point-to-point
MOBILE	MOBILE		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
SPACE RESEARCH (deep space) (Earth-to-space) **5.458** **5.459**	SPACE RESEARCH (deep space) (Earth-to-space) **Space Operation (Earth-to-space)** 5.458	PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 190 MHz - 7 235 MHz			
EARTH EXPLORATION-SATELLITE (Earth-to-space) **5.460A 5.460B**	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B	Fixed	Point-to-point
FIXED **MOBILE** **SPACE RESEARCH (Earth-to-space) 5.460** **5.458** **5.459**	FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458	PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Passive sensors (satellite)	For sea surface temperature, sea surface wind speed and soil moisture measurements
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 235 MHz - 7 250 MHz			
EARTH EXPLORATION-SATELLITE (Earth-to-space) **5.460A**	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A	Fixed	Point-to-point
FIXED **MOBILE** **5.458**	FIXED **Space Research (Earth-to space)** 5.458	PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Passive sensors (satellite)	For sea surface temperature, sea surface wind speed and soil moisture measurements
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 250 MHz - 7 300 MHz			
FIXED	FIXED	Fixed	Point-to-point. FIXED and MOBILE services not to be implemented.
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE	Land military systems	
5.461	5.461 **PSE1**	MSS Earth stations	Mobile satellite applications within the band 7250-7375 MHz
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 300 MHz - 7 375 MHz			
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Land military systems	
5.461	5.461 **PSE1**	MSS Earth stations	Mobile satellite applications within the band 7250-7375 MHz
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 375 MHz - 7 450 MHz			
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Land military systems	
MARITIME MOBILE-SATELLITE (space-to-Earth)	MARITIME MOBILE-SATELLITE (space-to-Earth)		
5.461AA 5.461AB	5.461AA 5.461AB	MSS Earth stations	Mobile satellite applications
	PSE1		
		PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 450 MHz - 7 550 MHz			
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	Land military systems	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
MARITIME MOBILE-SATELLITE (space-to-Earth)	MARITIME MOBILE-SATELLITE (space-to-Earth)	PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
5.461AA 5.461AB	5.461AA 5.461AB		
5.461A	5.461A **PSE1**		
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB as well as on-board aircraft regulation

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
			within the band 6.0-8.5 GHz
		Weather satellites	Limited to geostationary systems
7 550 MHz - 7 750 MHz			
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Land military systems	
MARITIME MOBILE-SATELLITE (space-to-Earth)	MARITIME MOBILE-SATELLITE (space-to-Earth)		
5.461AA 5.461AB	5.461AA 5.461AB	PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
	PSE1		
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
7 750 MHz - 7 900 MHz			
FIXED	FIXED	Fixed	Point-to-point
METEOROLOGICAL-SATELLITE (space-to-Earth) **5.461B**	METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B	PMSE	Portable or mobile wireless video, wordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		UWB applications	Generic UWB as well as on-board aircraft regulation within the band 6.0-8.5 GHz
		Weather satellites	Limited to non-geostationary systems

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
7 900 MHz - 8 025 MHz			
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE	Land military systems	
5.461	5.461 **PSE1**	MSS Earth stations	Mobile satellite applications
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
8 025 MHz - 8 175 MHz			
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)	Earth exploration-satellite	Satellite payload telemetry
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE 5.463	MOBILE 5.463	Land military systems	
5.462A	5.462A **PSE1**	Land mobile	Mobile applications within the band 8025-8200 MHz
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
8 175 MHz - 8 215 MHz			
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)	Earth exploration-satellite	Satellite payload telemetry
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
METEOROLOGICAL-SATELLITE (Earth-to-space)	METEOROLOGICAL-SATELLITE (Earth-to-space)	Land military systems	
MOBILE 5.463	MOBILE 5.463		
5.462A	5.462A **PSE1**	Land mobile	Mobile applications within the band 8025-8200 MHz
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Satellite systems (military)	
		UWB applications	Generic UWB. On-board aircraft regulation within the band 6.0-8.5 GHz
8 215 MHz - 8 400 MHz			
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)	Earth exploration-satellite	Satellite payload telemetry
FIXED	FIXED	Fixed	Point-to-point
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE 5.463	5.462A	Land military systems	
5.462A	5.463		
		PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radio astronomy	Continuum observations, VLBI (used by SRS)
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Satellite systems (military)	
		UWB applications	Generic UWB as well as on-board aircraft regulation within the band 6.0-8.5 GHz
8 400 MHz - 8 500 MHz			
FIXED	FIXED	Fixed	Point-to-point
MOBILE except aeronautical mobile	SPACE RESEARCH (space-to-Earth) 5.465		
SPACE RESEARCH (space-to-Earth) 5.465 5.466	**Radiolocation**	PMSE	Portable or mobile wireless video, cordless cameras, temporary P-t-P video links in 7-8.5 GHz tuning range
		Radiodetermination applications	Within the band 6000-8500 MHz for LPR applications
		Space research	Satellite payload telemetry. The band 8400-8450 MHz is limited to deep space applications. Continuum observations, VLBI (used by SRS)
		UWB applications	Generic UWB as well as on-board aircraft regulation within the band 6.0-8.5 GHz
8 500 MHz - 8 550 MHz			
RADIOLOCATION	RADIOLOCATION	Aeronautical military systems	
5.468	**FIXED 5.468**		
5.469	**MOBILE 5.468**	Aeronautical navigation	Civil and military e.g. airfield approach
	PSE1		
	PSE18	Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB
8 550 MHz - 8 650 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Active sensors (satellite)	
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Aeronautical military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.468	**FIXED 5.468**		
5.469	**MOBILE 5.468**	Aeronautical navigation	Civil and military e.g. airfield approach
5.469A	5.469A **PSE1**		
	PSE18	Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB
8 650 MHz - 8 750 MHz			
RADIOLOCATION	RADIOLOCATION	Aeronautical military systems	
5.468	**FIXED 5.468**		
5.469	**MOBILE 5.468**	Aeronautical navigation	Civil and military e.g. airfield approach
	PSE1		
	PSE18	Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB
8 750 MHz - 8 825 MHz			
RADIOLOCATION	RADIOLOCATION	Aeronautical military systems	
AERONAUTICAL RADIONAVIGATION 5.470	AERONAUTICAL RADIONAVIGATION 5.470		
	Space research	Aeronautical navigation	Civil and military e.g. airfield approach
	PSE1		
	PSE18	Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
8 825 MHz - 8 850 MHz			
RADIOLOCATION **AERONAUTICAL RADIONAVIGATION 5.470** **5.471**	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 **MARITIME RADIONAVIGATION 5.471** **Space research** **PSE1** **PSE18**	Aeronautical military systems	
		Aeronautical navigation	Civil and military e.g. airfield approach
		Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB
8 850 MHz - 9 000 MHz			
RADIOLOCATION **MARITIME RADIONAVIGATION 5.472** **5.473**	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 **Space research** **PSE1** **PSE18**	Aeronautical military systems	
		Aeronautical navigation	Civil and military e.g. airfield approach
		Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		UWB applications	Generic UWB
9 000 MHz - 9 200 MHz			
RADIOLOCATION **AERONAUTICAL RADIONAVIGATION 5.337** **5.471** **5.473A**	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 **MARITIME RADIONAVIGATION 5.471** **Space research** 5.473A **PSE1** **PSE18**	Aeronautical military systems	
		Aeronautical navigation	Civil and military e.g. airfield approach
		Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance. EN 303 213-1 X-band sensors
		Radiolocation (military)	Shipborne, land and airborne surveillance

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
9 200 MHz - 9 300 MHz			
EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C	Aeronautical military systems	
RADIOLOCATION	RADIOLOCATION	Aeronautical navigation	Civil and military e.g. airfield approach
MARITIME RADIONAVIGATION 5.472	MARITIME RADIONAVIGATION 5.472		
5.473	**Space research**	Radiodetermination applications	Within the band 9200-9975 MHz; and within the band 8.5-10.6 GHz for TLPR application
5.474	5.474 **PSE1**		
5.474D	5.474D **PSE18**		
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		Synthetic aperture radar	
9 300 MHz - 9 500 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Aeronautical military systems	
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION 5.475	RADIONAVIGATION 5.475	Aeronautical navigation	Civil and military e.g. airfield approach
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
5.427	5.427 **PSE1**	Radiodetermination applications	Within the band 9200-9975 MHz; and within the band 8.5-10.6 GHz for TLPR application
5.474	5.474 **PSE18**		
5.475A	5.475A		
5.475B	5.475B		
5.476A	5.476A	Radiolocation (civil)	Shipborne, land and airborne surveillance EN 303
		Radiolocation (military)	Shipborne, land and airborne surveillance
		Satellite systems (military)	
		Weather radar	Shipborne, land and airborne serveillance
9 500 MHz - 9 800 MHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Active sensors (satellite)	
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION	SPACE RESEARCH (active)	Aeronautical military systems	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
SPACE RESEARCH (active)	5.476A **PSE1**		
5.476A	**PSE18**	Aeronautical navigation	Civil and military e.g. airfield approach
		Radiodetermination applications	Within the band 9200-9975 MHz, and within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		Satellite systems (military)	
9 800 MHz - 9 900 MHz			
RADIOLOCATION	RADIOLOCATION	Aeronautical military systems	
Earth exploration-satellite (active)	**FIXED 5.477**		
Fixed	Earth exploration-satellite (active)	Aeronautical navigation	Civil and military e.g. airfield approach
Space research (active)	Space research (active)		
5.477	5.478A **PSE1**	Radiodetermination applications	Within the band 9200-9975 MHz; and within the band 8.5-10.6 GHz for TLPR application
5.478	5.478B **PSE18**		
5.478A			
5.478B			
		Radiolocation (civil)	Shipborne, land and airborne surveillance
		Radiolocation (military)	Shipborne, land and airborne surveillance
		Satellite systems (military)	
9 900 MHz - 10 000 MHz			
EARTH EXPLORATION-SATELLITE (active) 5.474A	EARTH EXPLORATION-SATELLITE (active) 5.474A	Aeronautical military systems	
5.474B 5.474C	5.474B 5.474C		
RADIOLOCATION	RADIOLOCATION	Aeronautical navigation	Civil and military e.g. Airfield approach
Fixed	**FIXED 5.477**		
5.474D	5.478	Radiodetermination applications	Within the band 9200-9975 MHz; and within the band 8.5-10.6 GHz for TLPR application
5.477	5.479		
5.478			
5.479		Radiolocation (military)	Shipborne, land and airborne surveillance
		Satellite systems (military)	
		Synthetic aperture radar	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
10 GHz - 10.4 GHz			
EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C	Aeronautical military systems	
FIXED	FIXED	Amateur	Within the band 10-10.5 GHz
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION	FWA	Including Point-to-Multipoint
Amateur	Amateur		
5.474D	5.474D **PSE1**	Fixed	
5.479	5.479 **PSE14**		
		Land military systems	
		Maritime military systems	
		PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0- 10.68 GHz tuning range
		Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	
		Radiolocation (military)	
		Synthetic aperture radar	
10.4 GHz - 10.45 GHz			
FIXED	FIXED	Aeronautical military systems	
MOBILE	RADIOLOCATION		
RADIOLOCATION	Amateur	Amateur	Within the band 10-10.5 GHz
Amateur	**Mobile**		
	PSE1	Land military systems	
	PSE13		
	PSE14	Maritime military systems	
		PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0-10.68 GHz tuning range
		Radiodetermination applications	Within the band 8.5-10.6 GHz for TLPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiolocation (civil)	Low power radars in certain subbands
		Radiolocation (military)	
10.45 GHz - 10.5 GHz			
RADIOLOCATION **Amateur** **Amateur-satellite** **5.481**	RADIOLOCATION **FIXED 5.481** **MOBILE 5.481** Amateur Amateur-satellite **PSE1** **PSE13** **PSE14** **PSE17**	Aeronautical military systems	
		Amateur	Within the band 10-10.5 GHz
		Amateur-satellite	
		Land military systems	
		Maritime military systems	
		PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0-10.68 GHz tuning range
		Radiodetermination applications	Within the band 10.5-10.6 GHz, and within the band 8.5-10.6 GHz for TLPR application
		Radiolocation (civil)	
		Radiolocation (military)	
10.5 GHz - 10.55 GHz			
FIXED **MOBILE** **Radiolocation**	FIXED MOBILE Radiolocation **PSE14**	Fixed	Including Point-to-Multipoint
		PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0-10.68 GHz tuning range
		Radiodetermination applications	Within the band 10.5-10.6 GHz; and within the band 8.5-10.6 GHz for TLPR application
10.55 GHz - 10.6 GHz			
FIXED **MOBILE except aeronautical mobile** **Radiolocation**	FIXED MOBILE except aeronautical mobile Radiolocation **PSE14**	Fixed	Including Point-to-Multipoint
		PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0-10.68 GHz tuning range

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiodetermination applications	Within the band 10.5-10.6 GHz, and within the band 8.5-10.6 GHz for TLPR application
10.6 GHz - 10.68 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Fixed	Including Point-to-Multipoint
FIXED	FIXED		
MOBILE except aeronautical mobile	RADIO ASTRONOMY		
RADIO ASTRONOMY	SPACE RESEARCH (passive)	PMSE	Portable video, cordless cameras, temporary P-t-P video links in the 10.0-10.68 GHz tuning range
SPACE RESEARCH (passive)	Mobile except aeronautical mobile		
Radiolocation	Radiolocation		
5.149	5.149 **PSE13**		
5.482	5.482	Passive sensors (satellite)	Surface emissivity and precipitation measurements
5.482A	5.482A		
		Radio astronomy	Continuum observations, VLBI
10.68 GHz - 10.7 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Surface emmissivity and precipitation measurement
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	**FIXED 5.483**	Radio astronomy	Continuum observations, VLBI
5.483	**MOBILE except aeronautical mobile 5.483**		
	5.340		
10.7 GHz - 10.95 GHz			
FIXED	FIXED	AES	
FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.441	FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.441	ESIM	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
	Mobile satellite (space-to Earth)		
		ESV	
		FSS Earth stations	Within the band 10.7-10.95/11.2-11.45 GHz in accordance with App 30B of RR SIT/SUT - VSAT

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Fixed	Limited to high capacity fixed links
		HEST	
		LEST	
		NGSO FSS	
10.95 GHz - 11.2 GHz			
FIXED	FIXED	AES	
FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.484A 5.484B	FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.484A 5.484B	ESIM	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
		ESV	
		Fixed	Limited to high capacity fixed links
		NGSO FSS	
11.2 GHz - 11.45 GHz			
FIXED	FIXED	AES	
FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.441	FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.441	ESIM	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
		ESV	
		Fixed	Limited to high capacity fixed links

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		NGSO FSS	
11.45 GHz - 11.7 GHz			
FIXED	FIXED	AES	
FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.484A 5.484B	FIXED-SATELLITE (Earth-to-space) 5.484 (space-to-Earth) 5.484A 5.484B	ESIM	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
		ESV	
		Fixed	Limited to high capacity fixed links
		NGSO FSS	
11.7 GHz - 12.5 GHz			
FIXED	MOBILE except aeronautical mobile	Broadcasting (satellite)	In accordance with App 30 of RR. SIT within the band 12.4 - 12.5 GHz
MOBILE except aeronautical mobile	BROADCASTING		
BROADCASTING	5.487		
BROADCASTING-SATELLITE 5.492	5.487A		
5.487			
5.487A		ESIM	
		HEST	
		LEST	
		NGSO FSS	
12.5 GHz - 12.75 GHz			
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.484A 5.484B	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.484A 5.484B	AES	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.494 **5.495** **5.496**	**FIXED 5.494** **MOBILE except aeronautical mobile 5.494** 5.495	ESIM	
		ESV	
		FSS Earth stations	Priority for civil networks. Low density carriers, including VSATs and digital SNG are encouraged to use this band VSAT - SIT/SUT
		HEST	
		LEST	
		NGSO FSS	
12.75 GHz - 13.25 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.441** **MOBILE** **Space research (deep space) (space-to-Earth)**	FIXED FIXED-SATELLITE (Earth-to-space) 5.441	FSS Earth stations Fixed	
13.25 GHz - 13.4 GHz			
EARTH EXPLORATION-SATELLITE (active) **AERONAUTICAL RADIONAVIGATION 5.497** **SPACE RESEARCH (active)** **5.498A** **5.499**	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A **PSE22**	Active sensors (satellite) Airborne doppler navigation aids	Altimeters, scatterometers, precipitation radars
		Maritime radar	Ship berthing radars

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
13.4 GHz - 13.65 GHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	-	Data relay satellites
FIXED-SATELLITE (space-to-Earth) 5.499A 5.499B	FIXED-SATELLITE (space-to-Earth) 5.499A 5.499B		
RADIOLOCATION	RADIOLOCATION	Active sensors (satellite)	Altimeters, scatterometers, preciptation radars
SPACE RESEARCH 5.499C 5.499D	SPACE RESEARCH 5.499C 5.499D		
Standard frequency and time signal-satellite (Earth-to-space)	**FIXED 5.500**	Airborne doppler navigation aids	
5.499E	**MOBILE 5.500**		
5.500	5.501B **PSE1**	FSS Earth stations	
5.501	**PSE22**		
5.501B		Maritime radar	Ship berthing radars
		Radiodetermination applications	Within the band 13.4-14.0 GHz
		Radiolocation (military)	
13.65 GHz - 13.75 GHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	-	Data relay satellites
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH 5.501A	SPACE RESEARCH 5.501A	Active sensors (satellite)	Altimeters, scatterometers, preciptation radars
Standard frequency and time signal-satellite (Earth-to-space)	**FIXED 5.500**		
5.499	**MOBILE 5.500**		
5.500	5.501B **PSE1**	Airborne doppler navigation aids	
5.501	**PSE22**		
5.501B		Maritime radar	Ship berthing radars
		Radiodetermination applications	Within the band 13.4-14.0 GHz
		Radiolocation (military)	
13.75 GHz - 14 GHz			
FIXED-SATELLITE (Earth-to-space) 5.484A	FIXED-SATELLITE (Earth-to-space) 5.484A	-	Data relay satellites
RADIOLOCATION	RADIOLOCATION		
Earth exploration-satellite	**FIXED 5.500**	FSS Earth stations	
Standard frequency and time signal-satellite (Earth-to-space)	**MOBILE 5.500**		
	Space research	Maritime radar	Navigation radars, ship berthing radars

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Space research	5.502 **PSE1**		
5.499	5.503 **PSE22**	Passive sensors (satellite)	Future VLBI measurements
5.500			
5.501		Radiodetermination applications	Within the band 13.4-14.0 GHz
5.502			
5.503		Radiolocation (military)	
14 GHz - 14.25 GHz			
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	AES	
RADIONAVIGATION 5.504	**FIXED 5.505**	ESIM	
Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A	Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A		
Space research	Space research		
5.504A	5.504A		
5.505		ESV	
		HEST	
		LEST	
		MSS Earth stations	Priority for civil networks
		NGSO FSS	
		VSAT	Low density carriers, including VSATs and digital SNG, are encouraged to use this band
14.25 GHz - 14.3 GHz			
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B	AES	
RADIONAVIGATION 5.504	**FIXED 5.505**	ESIM	
Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508C	Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508C		
Space research	Space research		
5.504A	5.504A		
5.505	5.508		
5.508		ESV	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		MSS Earth stations	Priority for civil networks
		NGSO FSS	
		VSAT	SNG
14.3 GHz - 14.4 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B** **MOBILE except aeronautical mobile** **Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A** **Radionavigation-satellite** **5.504A**	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A	AES ESIM ESV	
		FSS Earth stations	Fixed links to be coordinated with Fixed Satellite Services on a national basis
		MSS Earth stations	Priority for civil networks
		NGSO FSS	
		VSAT	SNG
14.4 GHz - 14.47 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B** **MOBILE except aeronautical mobile** **Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A** **Space research (space-to-Earth)** **5.504A**	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A 5.504A	AES ESIM ESV	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		FSS Earth stations	Fixed links to be coordinated with Fixed Satellite Services on a national basis
		MSS Earth stations	Priority for civil networks
		NGSO FSS	
		VSAT	SNG
14.47 GHz - 14.5 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B** **MOBILE except aeronautical mobile** **Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A** **Radio astronomy** **5.149** **5.504A**	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Radio astronomy 5.149 5.504A	AES ESIM ESV	
		FSS Earth stations	Fixed links to be coordinated with Fixed Satellite Service on a national basis
		MSS Earth stations	Priority for civil networks
		NGSO FSS	
		Radio astronomy	Spectral line observations, VLBI
		VSAT	SNG
14.5 GHz - 14.75 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510**	FIXED MOBILE **Radio astronomy**	Aeronautical military systems Fixed	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
MOBILE	**PSE1**		
Space research 5.509G	**PSE15**	Land military systems	
		Maritime military systems	
		Radio astronomy	VLBI (when compatible with primary use)
14.75 GHz - 14.8 GHz			
FIXED	FIXED	Aeronautical military systems	
FIXED-SATELLITE (Earth-to-space) 5.510	MOBILE		
MOBILE	Radio Astronomy	Land military systems	
Space research 5.509G	**PSE1**		
	PSE15	Maritime military systems	
		Radio astronomy	VLBI (when compatible with primary use)
14.8 GHz - 15.35 GHz			
FIXED	FIXED	Aeronautical military systems	
MOBILE	MOBILE		
Space research	**Radio astronomy**	Fixed	
5.339	5.339 **PSE1**		
	PSE15	Land military systems	
		Maritime military systems	
		Radio astronomy	VLBI (when compatible with primary use)
15.35 GHz - 15.4 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Radio astronomy	Continuum observations, VLBI
5.340	**Fixed 5.511**		
5.511	**Mobile 5.511**		
	5.340		
15.4 GHz - 15.43 GHz			
RADIOLOCATION 5.511E 5.511F	RADIOLOCATION 5.511E 5.511F	Airborne doppler navigation aids	Doppler radar low power sensing
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiolocation (civil)	Ground movement radars
15.43 GHz - 15.63 GHz			
FIXED-SATELLITE (Earth-to-space) 5.511A **RADIOLOCATION 5.511E 5.511F** **AERONAUTICAL RADIONAVIGATION** **5.511C**	FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	Airborne doppler navigation aids	Doppler radar low power sensing
		FSS Earth stations	MSS feeder links
		Radiolocation (civil)	Ground movement radars
15.63 GHz - 15.7 GHz			
RADIOLOCATION 5.511E 5.511F **AERONAUTICAL RADIONAVIGATION**	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	Airborne doppler navigation aids	Doppler radar low power sensing
		Radiolocation (civil)	Ground movement radars
15.7 GHz - 16.6 GHz			
RADIOLOCATION **5.512** **5.513**	RADIOLOCATION **FIXED 5.512** **MOBILE 5.512** 5.513 **PSE1**	Radiolocation (military)	
16.6 GHz - 17.1 GHz			
RADIOLOCATION **Space research (deep space) (Earth-to-space)** **5.512** **5.513**	RADIOLOCATION **FIXED 5.512** **MOBILE 5.512** Space research (deep space) (Earth-to-space) 5.513 **PSE1**	Radiolocation (military)	
17.1 GHz - 17.2 GHz			
RADIOLOCATION **5.512** **5.513**	RADIOLOCATION **FIXED 5.512** **MOBILE 5.512** 5.513 **PSE1**	GBSAR Radiolocation (military)	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
17.2 GHz - 17.3 GHz			
EARTH EXPLORATION-SATELLITE (active) **RADIOLOCATION** **SPACE RESEARCH (active)** **5.512** **5.513** **5.513A**	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) **FIXED 5.512** **MOBILE 5.512** 5.513 **PSE1** 5.513A	GBSAR Radiolocation (military)	
17.3 GHz - 17.7 GHz			
FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B **Radiolocation** **5.514**	FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation **Fixed 5.514** **Mobile 5.514** **PSE1**	FSS Earth stations Feeder links GSO ESOMPs NGSO ESOMPs Radiolocation (military)	High Density FSS Feeder links for the BSS service. Appendix 30A of RR Limited to land based and maritime E/S
17.7 GHz - 18.1 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.484A 5.517A** **MOBILE**	FIXED FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.484A 5.517A	FSS Earth stations Feeder links Fixed GSO ESOMPs NGSO ESOMPs	To coordinated Earth stations. Priority for civil networks Feeder links for the BSS service. Appendix 30A of RR Limited to land based and maritime E/S
18.1 GHz - 18.4 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.520 (space-to-Earth) 5.484A 5.517A**	FIXED FIXED-SATELLITE (Earth-to-space) 5.520 (space-to-Earth) 5.484A 5.517A	FSS Earth stations	To coordinated Earth stations. Priority for civil networks

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
MOBILE	**METEOROLOGICAL-SATELLITE (SPACE-TO EARTH)**	Feeder links	Feeder links for the BSS service
5.519	5.519		
5.521	5.521	Fixed	
		GSO ESOMPs	
		NGSO ESOMPs	Limited to land based and maritime E/S
18.4 GHz - 18.6 GHz			
FIXED	FIXED	FSS Earth stations	To coordinated Earth stations. Priority for civil networks
FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A	FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A		
MOBILE		Fixed	
		GSO ESOMPs	
		NGSO ESOMPs	Limited to land based and maritime E/S
18.6 GHz - 18.8 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	FSS Earth stations	To coordinated Earth stations. Priority for civil networks
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth) 5.517A 5.222B	FIXED-SATELLITE (space-to-Earth) 5.517A 5.222B	Fixed	
MOBILE except aeronautical mobile	5.522A		
Space research (passive)	5.522C		
5.522A		GSO ESOMPs	
5.522C			
		NGSO ESOMPs	Limited to land based and maritime E/S
		Passive sensors (satellite)	Surface emmissivity, snow, sea, ice and precipitation
18.8 GHz - 19.3 GHz			
FIXED	FIXED	FSS Earth stations	To coordinated Earth stations. Priority for civil networks
FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A	FIXED-SATELLITE (space-to-Earth) 5.523A		
MOBILE		Fixed	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		GSO ESOMPs	
		NGSO ESOMPs	Limited to land based and maritime E/S
19.3 GHz - 19.7 GHz			
FIXED **FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E** **MOBILE**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E	FSS Earth stations Fixed GSO ESOMPs	To coordinated Earth stations. Priority for civil networks
		NGSO ESOMPs	Limited to land based and maritime E/S
19.7 GHz - 20.1 GHz			
FIXED-SATELLITE (space-to-Earth) 5.527A 5.484A 5.484B 5.516B **Mobile-satellite (space-to-Earth)** **5.524**	FIXED-SATELLITE (space-to-Earth) 5.527A 5.484A 5.484B 5.516B **FIXED 5.524** **MOBILE 5.524** Mobile-satellite (space-to-Earth)	FSS Earth stations GSO ESOMPs HEST LEST	High Density FSS
		MSS Earth stations	For uncoordinated Earth stations SUT
		NGSO ESOMPs	Limited to land based and maritime E/S
20.1 GHz - 20.2 GHz			
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.527A 5.484B **MOBILE-SATELLITE (space-to-Earth)** **5.524** **5.525** **5.526**	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.527A 5.484B MOBILE-SATELLITE (space-to-Earth) **FIXED 5.524** **MOBILE 5.524** 5.525	FSS Earth stations GSO ESOMPs HEST	High Density FSS

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.527	5.526		
5.528	5.527		
	5.528	LEST	
		MSS Earth stations	For uncoordinated Earth stations SUT
		NGSO ESOMPs	Limited to land based and maritime E/S
20.2 GHz - 21.2 GHz			
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	MSS Earth stations	For uncoordinated Earth stations
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
Standard frequency and time signal-satellite (space-to-Earth)	**FIXED 5.524**	Satellite systems (military)	
	MOBILE 5.524		
5.524	**PSE1**		
21.2 GHz - 21.4 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	PMSE	Cordless Cameras; Temporary point-to- point video link
FIXED	FIXED		
MOBILE	MOBILE		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
21.4 GHz - 22 GHz			
FIXED	BROADCASTING-SATELLITE 5.208B	Broadcasting (satellite)	
MOBILE	5.530A		
BROADCASTING-SATELLITE 5.208B	5.530B		
5.530A		PMSE	Cordless Cameras; Temporary point-to- point video link
5.530B			
		SRR	
22 GHz - 22.21 GHz			
FIXED	FIXED	Fixed	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.149	RADIO ASTRONOMY		
	SPACE RESEARCH (passive)	PMSE	Cordless Cameras; Temporary point-to- point video link
	5.149 **PSE14**		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio astronomy	Continuum and spectral line observations (e.g. water line), VLBI
		SRR	
22.21 GHz - 22.5 GHz			
EARTH EXPLORATION-SATELLITE (passive) **FIXED** **MOBILE except aeronautical mobile** **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **5.149** **5.532**	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) **Earth exploration-satellite (passive)** **Mobile PSE21** 5.149 **PSE14** 5.532	Fixed PMSE Radio astronomy SRR	Cordless Cameras; Temporary point-to- point video link Continuum and spectral line observations (e.g. water line), VLBI
22.5 GHz - 22.55 GHz			
FIXED **MOBILE**	FIXED MOBILE **PSE21** **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **PSE14**	Fixed PMSE Radio astronomy SRR	Cordless Cameras; Temporary point-to- point video link Continuum and spectral line observations (e.g. water line), VLBI
22.55 GHz - 23.15 GHz			
FIXED **INTER-SATELLITE 5.338A** **MOBILE** **SPACE RESEARCH (Earth-to-space) 5.532A** **5.149**	FIXED INTER-SATELLITE 5.338A MOBILE **PSE21** **RADIO ASTRONOMY** SPACE RESEARCH **(passive)** **PSE14**	Fixed PMSE	Cordless Cameras; Temporary point-to- point video link

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radio astronomy	Continuum and spectral line observations (e.g. water line), VLBI
		SRR	
23.15 GHz - 23.55 GHz			
FIXED **INTER-SATELLITE 5.338A** **MOBILE**	FIXED INTER-SATELLITE 5.338A MOBILE **PSE21**	Fixed	
		PMSE	Cordless Cameras; Temporary point-to- point video link
		SRR	
23.55 GHz - 23.6 GHz			
FIXED **MOBILE**	FIXED MOBILE **PSE21** **INTER-SATELLITE**	Fixed	
		PMSE	Cordless Cameras; Temporary point-to- point video link
		SRR	
23.6 GHz - 24 GHz			
EARTH EXPLORATION-SATELLITE (passive) **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **5.340**	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive sensors (satellite)	Measurement of water vapour, liquid water, clouds for atsmospheric sounding
		Radio astronomy	Continuum and spectral line observations (e.g. ammonia line). VLBI
		SRR	
24 GHz - 24.05 GHz			
AMATEUR **AMATEUR-SATELLITE** **5.150**	AMATEUR AMATEUR-SATELLITE 5.150	Amateur	Within the band 24-24.25 GHz
		Amateur-satellite	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		ISM	Within the band 24-24.25 GHz
		Non-specific SRDs	Within the band 24-24.25 GHz
		PMSE	Cordless Cameras; Temporary point-to- point video link
		SRR	
24.05 GHz - 24.25 GHz			
RADIOLOCATION	RADIOLOCATION	Active sensors (satellite)	Rain radars from satellites
Amateur	Amateur		
Earth exploration-satellite (active)	Earth exploration-satellite (active)	Amateur	Within the band 24-24.25 GHz
5.150	**Fixed**		
	Mobile	ISM	Within the band 24-24.25 GHz
	5.150 **PSE1**	Non-specific SRDs	Within the band 24-24.25 GHz
		PMSE	Cordless Cameras; Temporary point-to- point video link
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Includes narrow band SRR. Within the band 24.05-26.50 GHz for LPR applications
		Radiolocation (military)	
		SRR	
		TTT	Automotive radars
24.25 GHz - 24.45 GHz			
FIXED	FIXED	Fixed	Unidirectional fixed links
MOBILE except aeronautical mobile 5.338A 5.532AB	**MOBILE** 5.338A 5.532AB **PSE14**		
		MFCN	Within 24.25-27.5 GHz
		PMSE	Cordless Cameras; Temporary point-to- point video link

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
		SRR	
24.45 GHz - 24.5 GHz			
FIXED **INTER-SATELLITE** **MOBILE except aeronautical mobile 5.338A 5.532AB**	FIXED **MOBILE** 5.338A 5.532AB **PSE14**	Fixed	Unidirectional fixed links
		MFCN	Within 24.25-27.5 GHz
		PMSE	Cordless Cameras; Temporary point-to- point video link
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
		SRR	
24.5 GHz - 24.65 GHz			
FIXED **INTER-SATELLITE** **MOBILE except aeronautical mobile 5.338A 5.532AB**	FIXED **MOBILE** 5.338A 5.532AB	FWA	CRS paired with 25.5-26.5 GHz for FDD systems
		Fixed	
		MFCN	Within 24.25-27.5 GHz
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
		SRR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
24.65 GHz - 24.75 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.532B** **INTER-SATELLITE** **MOBILE except aeronautical mobile 5.338A 5.532AB**	FIXED FIXED-SATELLITE (Earth-to-space) 5.532B **MOBILE** 5.338A 5.532AB	FWA Fixed MFCN Radiodetermination applications SRR	CRS paired with 25.5-26.5 GHz for FDD systems Within 24.25-27.5 GHz Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
24.75 GHz - 25.25 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.532B** **MOBILE except aeronautical mobile 5.338A 5.532AB**	FIXED FIXED-SATELLITE (Earth-to-space) 5.532B **MOBILE** 5.338A 5.532AB	FWA Fixed MFCN Radiodetermination applications SRR	CRS paired with 25.5-26.5 GHz for FDD systems Within 24.25-27.5 GHz Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
25.25 GHz - 25.5 GHz			
FIXED 5.534A **INTER-SATELLITE 5.536** **MOBILE 5.338A 5.532AB** **Standard frequency and time signal-satellite (Earth-to-space)**	FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB **PSE1**	Aeronautical military systems FWA Fixed	 CRS paired with 25.5-26.5 GHz for FDD systems

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Land military systems	
		MFCN	Within 24.25-27.5 GHz
		Maritime military systems	
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
		SRR	
25.5 GHz - 26.5 GHz			
EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B **FIXED 5.534A** **INTER-SATELLITE 5.536** **MOBILE 5.338A 5.532Ab** **SPACE RESEARCH (space-to-Earth) 5.536C** **Standard frequency and time signal-satellite (Earth-to-space)** **5.536A**	FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532Ab SPACE RESEARCH (space-to-Earth) 5.536C **Earth exploration satellite (space to Earth) 5.536B** 5.536A **PSE1**	Aeronautical military systems	
		FWA	TS should be paired with 24.5-25.5 GHz for FDD systems
		Fixed	
		Land military systems	
		MFCN	Within 24.25-27.5 GHz
		Maritime military systems	
		Radiodetermination applications	Within the band 24.05-27.00 GHz for TLPR application. Within the band 24.05-26.50 GHz for LPR applications
		SRR	
		Space research	Satellite payload telemetry

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
26.5 GHz - 27 GHz			
EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B **FIXED 5.534A** **INTER-SATELLITE 5.536** **MOBILE 5.338A 5.532A** **SPACE RESEARCH (space-to-Earth) 5.536C** **Standard frequency and time signal-satellite (Earth-to-space)** **5.536A**	FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532A SPACE RESEARCH (space-to-Earth) 5.536C Earth exploration-satellite (space-to-Earth) 5.536B 5.536A **PSE1**	Land military systems MFCN Radiodetermination applications SRR Space research	 Within 24.25-27.5 GHz Within the band 24.05-27.00 GHz for TLPR application Satellite payload telemetry
27 GHz - 27.5 GHz			
FIXED **INTER-SATELLITE 5.536** **MOBILE 5.338A 5.532AB**	FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB **Earth exploration-satellite (space-to-Earth) PSE1**	Land military systems MFCN	 Within 24.25-27.5 GHz
27.5 GHz - 28.5 GHz			
FIXED 5.537A **FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539** **MOBILE** **5.538** **5.540**	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 5.538 5.540	FSS Earth stations FWA Feeder links	The Earth-to-space direction for uncoordinated Earth stations within the band 27.5-27.8285 GHz.The space-to-Earth direction is limited to beacons for uplink power control 27.5-27.501 GHz CRS paired with 28.5-29.5 GHz for FDD systems. The Earth-to-space direction for uncoordinated earth stations within the band 27.5-27.8285 GHz. The space-to-Earth direction is limited to beacons for uplink power control 27.5-27.501 GHz Feeder links to be used for Broadcasting satellites (HDTV) 27.5-29.5 GHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Fixed	For frequency arrangement between FS and FSS see ECC/DEC/(05)01. CRS paired with 28.5-29.5 GHz for FDD systems.The Earth-to-space direction for uncoordinated Earth stations within the band 27.5-27.8285 GHz. The space-to-Earth direction is limited to beacons for uplink power control 27.5-27.501 GHz
		GSO ESOMPs	
		NGSO ESOMPs	Limited to land based and maritime E/S
28.5 GHz - 29.1 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523 5.539** **MOBILE** **Earth exploration-satellite (Earth-to-space) 5.541** **5.540**	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523 5.539 Earth exploration-satellite (Earth-to-space) 5.541 5.540	FSS Earth stations	Uncoordinated Earth stations within the band 28.4445-28.8365 GHz
		FWA	TS paired with 27.5-28.5 GHz for FDD systems. Uncoordinated Earth stations within the band 28.4445-28.8365 GHz
		Feeder links	Feeder links to be used for Broadcasting satellites (HDTV) 27.5-29.5 GHz
		Fixed	For frequency arrangement between FS and FSS see ECC/DEC/(05)01. TS paired with 27.5-28.5 GHz for FDD systems. Uncoordinated Earth stations within the band 28.4445-28.8365 GHz
		GSO ESOMPs	
		NGSO ESOMPs	Limited to land based and maritime E/S
29.1 GHz - 29.5 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A** **MOBILE** **Earth exploration-satellite (Earth-to-space) 5.541**	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A Earth exploration-satellite (Earth-to-space) 5.541 5.540	FSS Earth stations	Uncoordinated Earth stations within the band 29.4525-29.5 GHz
		FWA	TS paired with 27.5-28.5 GHz for FDD systems.
		Feeder links	Feeder links to be used for Broadcasting satellites

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.540			(HDTV) 27.5-29.5 GHz
		Fixed	Within the band 29.0605-29.4525 GHz. TS paired with 27.5-28.5 GHz for FDD systems. Uncoordinated Earth stations within the band 29.4525-29.5 GHz
		GSO ESOMPs	
29.5 GHz - 29.9 GHz			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539	GSO ESOMPs	
Earth exploration-satellite (Earth-to-space) 5.541	Earth exploration-satellite (Earth-to-space) 5.541	HEST	
Mobile-satellite (Earth-to-space)	Mobile-satellite (Earth-to-space)	LEST	
5.540	**Fixed 5.542**		
5.542	**Mobile 5.542**	MSS Earth stations	
	5.540		
		NGSO ESOMPs	Limited to land based and maritime E/S
		SIT/SUT	High Density FSS
29.9 GHz - 30 GHz			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539	**FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539**	FSS Earth stations	Limited to beacons for uplink power control 29.999-30 GHz
MOBILE-SATELLITE (Earth-to-space)	**MOBILE-SATELLITE (Earth-to-space)**		
Earth exploration-satellite (Earth-to-space) 5.541 5.543	**EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.541 5.543**	GSO ESOMPs	
5.525	**Fixed 5.542**	HEST	
5.526	**Mobile 5.542**		
5.527	5.525	LEST	
5.538	5.526		
5.540	5.527	MSS Earth stations	
5.542	5.538		
	5.540	NGSO ESOMPs	Limited to land based and maritime E/S
		SIT/SUT	High Density FSS

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
30 GHz - 31 GHz			
FIXED-SATELLITE (Earth-to-space) 5.338A **MOBILE-SATELLITE (Earth-to-space)** **Standard frequency and time signal-satellite (space-to-Earth)** **5.542**	FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) **Fixed 5.542** **Mobile 5.542** **PSE1**	FSS Earth stations MSS Earth stations Satellite systems (military)	For uncoordinated Earth stations
31 GHz - 31.3 GHz			
FIXED 5.338A 5.543B **MOBILE** **Space research 5.544 5.545** **Standard frequency and time signal-satellite (space-to-Earth)** **5.149**	FIXED 5.338A 5.543B MOBILE 5.149	Fixed Radio astronomy	Continuum observations
31.3 GHz - 31.5 GHz			
EARTH EXPLORATION-SATELLITE (passive) **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **5.340**	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive sensors (satellite) Radio astronomy	Measurement of sea ice, water vapour, oil spills, liquid water, clouds, surface temperature, emissivity and atmospheric attenuation. Reference window for the 50-60 GHz range Continuum observations
31.5 GHz - 31.8 GHz			
EARTH EXPLORATION-SATELLITE (passive) **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **Fixed** **Mobile except aeronautical mobile** **5.149** **5.546**	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) **FIXED 5.546** **MOBILE except aeronautical mobile 5.546** 5.149	Fixed Passive sensors (satellite) Radio astronomy	Measurement of sea ice, water vapour, oil spills, liquid water, clouds, surface temperature. Emissivity and atmospheric attenuation. Reference window for the 50-60 GHz range Continuum observations
31.8 GHz - 32 GHz			
FIXED 5.547A **RADIONAVIGATION** **SPACE RESEARCH (deep space) (space-to-Earth)** **5.547**	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547	FWA Fixed	Point-to-Point and Point-to-Multipoint High Density FS

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
5.547B **5.548**	5.548		
32 GHz - 32.3 GHz			
FIXED 5.547A **RADIONAVIGATION** **SPACE RESEARCH (deep space) (space-to-Earth)** **5.547** **5.547C** **5.548**	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	FWA Fixed	Point-to-Point and Point-to-Multipoint High Density FS
32.3 GHz - 33 GHz			
FIXED 5.547A **INTER-SATELLITE** **RADIONAVIGATION** **5.547** **5.547D** **5.548**	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	FWA Fixed	Point-to-Point and Point-to-Multipoint High Density FS
33 GHz - 33.4 GHz			
FIXED 5.547A **RADIONAVIGATION** **5.547** **5.547E**	FIXED 5.547A RADIONAVIGATION **INTER-SATELLITE** 5.547	FWA Fixed	Point-to-Point and Point-to-Multipoint High Density FS
33.4 GHz - 34.2 GHz			
RADIOLOCATION **5.549**	RADIOLOCATION **FIXED 5.549** **MOBILE except aeronautical mobile 5.549** **PSE1**	Radiodetermination applications Radiolocation (military)	Surveying and measurement
34.2 GHz - 34.7 GHz			
RADIOLOCATION **SPACE RESEARCH (deep space) (Earth-to-space)** **5.549**	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) **FIXED 5.549** **MOBILE except aeronautical mobile 5.549** **PSE1**	Radiodetermination applications Radiolocation (military)	Surveying and measurement

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
34.7 GHz - 35.2 GHz			
RADIOLOCATION **Space research** **5.549**	RADIOLOCATION **FIXED 5.549** **MOBILE except aeronautical mobile 5.549** Space research **PSE1**	Radiodetermination applications Radiolocation (military)	Surveying and measurement
35.2 GHz - 35.5 GHz			
METEOROLOGICAL AIDS **RADIOLOCATION** **5.549**	METEOROLOGICAL AIDS RADIOLOCATION **FIXED 5.549** **MOBILE except aeronautical mobile 5.549** **PSE1**	Active sensors (satellite) Radiolocation (military)	Rain radar from satellites
35.5 GHz - 36 GHz			
METEOROLOGICAL AIDS **EARTH EXPLORATION-SATELLITE (active)** **RADIOLOCATION** **SPACE RESEARCH (active)** **5.549** **5.549A**	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) **FIXED 5.549** **MOBILE except aeronautical mobile 5.549** 5.549A **PSE1**	Active sensors (satellite) Radiolocation (military)	
36 GHz - 37 GHz			
EARTH EXPLORATION-SATELLITE (active) **FIXED** **MOBILE** **SPACE RESEARCH (passive)** **5.149** **5.550A**	EARTH EXPLORATION-SATELLITE (active) FIXED MOBILE SPACE RESEARCH (passive) **Radio astronomy** 5.149 5.550A	Passive sensors (satellite) Radio astronomy	EESS surface emmissivity, snow, sea ice and precipitation Spectral line observations (Hydrogen cyanide and Hydroxil lines) 36.43-36.50 GHz
37 GHz - 37.5 GHz			
FIXED **MOBILE except aeronautical mobile 5.550B** **SPACE RESEARCH (space-to-Earth)** **5.547**	FIXED SPACE RESEARCH (space-to-Earth) 5.547	Fixed	Major use by civil Fixed Service systems. High Density fixed links

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
37.5 GHz - 38 GHz			
FIXED **FIXED-SATELLITE (space-to-Earth) 5.550C** **MOBILE except aeronautical mobile 5.550B** **SPACE RESEARCH (space-to-Earth)** **Earth exploration-satellite (space-to-Earth)** **5.547**	FIXED FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	FSS Earth stations Fixed	Uncoordinated Earth stations shall not claim protection from the Fixed Service Major use by civil Fixed Service systems. High Density fixed links
38 GHz - 39.5 GHz			
FIXED 5.550D **FIXED-SATELLITE (space-to-Earth) 5.550C** **MOBILE 5.550B** **Earth exploration-satellite (space-to-Earth)** **5.547**	FIXED FIXED-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	FSS Earth stations Fixed	Uncoordinated Earth stations shall not claim protection from the Fixed Service Major use by civil Fixed Service systems. High Density fixed links
39.5 GHz - 40 GHz			
FIXED **FIXED-SATELLITE (space-to-Earth) 5.516B** **5.550C** **MOBILE 5.550B** **MOBILE-SATELLITE (space-to-Earth)** **Earth exploration-satellite (space-to-Earth)** **5.550E** **5.547**	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	FSS Earth stations	
40 GHz - 40.5 GHz			
EARTH EXPLORATION-SATELLITE (Earth-to-space) **FIXED** **FIXED-SATELLITE (space-to-Earth) 5.516B** **5.550C** **MOBILE 5.550B** **MOBILE-SATELLITE (space-to-Earth)** **SPACE RESEARCH (Earth-to-space)** **Earth exploration-satellite (space-to-Earth) 5.550E**	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	FSS Earth stations	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
40.5 GHz - 41 GHz			
FIXED	FIXED	FSS Earth stations	
FIXED-SATELLITE (space-to-Earth) 5.550C	LAND MOBILE 5.550B		
LAND MOBILE 5.550B	BROADCASTING	Fixed	Point-to-point and terrestrial multipoint systems
BROADCASTING	BROADCASTING-SATELLITE		
BROADCASTING-SATELLITE	Aeronautical mobile		
Aeronautical mobile	Maritime mobile	MWS	Point-to-point and terrestrial multipoint systems
Maritime mobile	5.547		
5.547			
41 GHz - 42.5 GHz			
FIXED	FIXED	FSS Earth stations	
FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C	LAND MOBILE 5.550B		
	BROADCASTING	Fixed	Point-to-point and terrestrial multipoint systems
LAND MOBILE 5.550B	BROADCASTING-SATELLITE		
BROADCASTING	Aeronautical mobile		
BROADCASTING-SATELLITE	Maritime mobile	MWS	Point-to-point and terrestrial multipoint systems
Aeronautical mobile	5.547		
Maritime mobile	5.551H		
5.547	5.551I		
5.551F			
5.551H			
5.551I			
42.5 GHz - 43.5 GHz			
FIXED	FIXED	FSS Earth stations	
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE except aeronautical mobile 5.550B	MOBILE except aeronautical mobile	Fixed	Point-to-point and terrestrial multipoint systems
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
5.547	5.547	MWS	Point-to-point and terrestrial multipoint systems
		Radio astronomy	Continuum and spectral line observations (e.g. silicon monoxide line), VLBI
43.5 GHz - 45.5 GHz			
MOBILE 5.553 5.553A	MOBILE 5.553 5.553A	Aeronautical military systems	
MOBILE-SATELLITE	MOBILE-SATELLITE		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
RADIONAVIGATION **RADIONAVIGATION-SATELLITE** **5.554**	Fixed-satellite 5.554 **PSE1**	Land military systems Maritime military systems Satellite systems (military)	
45.5 GHz - 47 GHz		-	
MOBILE 5.553 5.553A **MOBILE-SATELLITE** **RADIONAVIGATION** **RADIONAVIGATION-SATELLITE** **5.554**	MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
47 GHz - 47.2 GHz			
AMATEUR **AMATEUR-SATELLITE**	AMATEUR AMATEUR-SATELLITE	Amateur Amateur-satellite	
47.2 GHz - 47.5 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.550C 5.552** **MOBILE 5.553B** **5.552A**	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.553B 5.552A	FSS Earth stations Feeder links HAPS PMSE	For fixed applications. Priority for civil networks For 40 GHz Broadcasting satellites Cordless cameras
47.5 GHz - 47.9 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A** **MOBILE 5.553B**	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	FSS Earth stations Feeder links PMSE	High Density FSS For 40 GHz Broadcasting satellites Cordless cameras
47.9 GHz - 48.2 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.55OC 5.552**	FIXED FIXED-SATELLITE (Earth-to-space) 5.552	FSS Earth stations	For fixed applications. Priority for civil networks

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
	MOBILE 5.553B		
MOBILE 5.553B	5.552A	Feeder links	For 40 GHz Broadcasting satellites
5.552A			
		HAPS	
		PMSE	Cordless cameras
48.2 GHz - 48.54 GHz			
FIXED	FIXED	FSS Earth stations	High Density FSS
FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B	FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B	Feeder links	For 40 GHz Broadcasting satellites
MOBILE	MOBILE		
		Fixed	Within the band 48.5-50.2 GHz and 50.9-52.6 GHz
		PMSE	Cordless cameras
48.54 GHz - 49.44 GHz			
FIXED	FIXED	FSS Earth stations	For fixed applications. Priority for civil networks
FIXED-SATELLITE (Earth-to-space) 5.550C 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
	MOBILE		
MOBILE	**RADIO ASTRONOMY**	Feeder links	48.5-49.2 GHz for 40 GHz Broadcasting satellites
5.149	5.149 **PSE14**		
5.340	5.340		
5.555	5.555	Fixed	Within the band 48.5-50.2 GHz and 50.9-52.6 GHz
		PMSE	Cordless cameras
		Radio astronomy	Spectral line observations (e.g. carbon monosulphide line)
49.44 GHz - 50.2 GHz			
FIXED	FIXED	FSS Earth stations	High Density FSS
FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B	FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B	Fixed	Within the band 48.5-50.2 GHz and 50.9-52.6 GHz
MOBILE	MOBILE		
	PSE14	PMSE	Cordless cameras

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
50.2 GHz - 50.4 GHz			
EARTH EXPLORATION-SATELLITE (passive) **SPACE RESEARCH (passive)** **5.340**	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	Passive sensors (satellite)	Atmospheric temperature sounding. Terrestrial passive radiometers. Reference window for the 52.6-59.3 GHz band
		Radio astronomy	Continuum and spectral line observations
50.4 GHz - 51.4 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C** **MOBILE** **Mobile-satellite (Earth-to-space)**	FIXED FIXED-SATELLITE (Earth-to-space) 5.338A Mobile-satellite (Earth-to-space)	- Fixed	Future satellite and terrestrial applications. Shared civil and non civil allocation Within the band 48.5-50.2 GHz and 50.9-52.6 GHz
51.4 GHz - 52.4 GHz			
FIXED **FIXED-SATELLITE (Earth-to-space) 5.555C** **MOBILE** **5.338A** **5.547** **5.556**	FIXED **5.338A** FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE **RADIO ASTRONOMY** 5.547 5.556	Fixed Radio astronomy	Within the band 48.5-50.2 GHz and 50.9-52.6 GHz Continuum and spectral line observations
52.4 GHz - 52.6 GHz			
FIXED 3.338A **MOBILE** **5.547** **5.556**	FIXED 3.338A MOBILE **RADIO ASTRONOMY** 5.547 5.556	Fixed Radio astronomy	Within the band 48.5-50.2 GHz and 50.9-52.6 GHz Continuum and spectral line observations
52.6 GHz - 54.25 GHz			
EARTH EXPLORATION-SATELLITE (passive) **SPACE RESEARCH (passive)** **5.340** **5.556**	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	Passive sensors (satellite) Radio astronomy	Atmospheric temperature sounding. Terrestrial passive radiometers Continuum and spectral line observations

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
54.25 GHz - 55.78 GHz			
EARTH EXPLORATION-SATELLITE (passive) **INTER-SATELLITE 5.556A** **SPACE RESEARCH (passive)** **5.556B**	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	Passive sensors (satellite)	Atmospheric temperature sounding. Terrestrial passive radiometers
55.78 GHz - 56.9 GHz			
EARTH EXPLORATION-SATELLITE (passive) **FIXED 5.557A** **INTER-SATELLITE 5.556A** **MOBILE 5.558** **SPACE RESEARCH (passive)** **5.547** **5.557**	EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.547 5.558	Fixed Passive sensors (satellite)	High density fixed links Atmospheric temperature sounding
56.9 GHz - 57 GHz			
EARTH EXPLORATION-SATELLITE (passive) **FIXED** **INTER-SATELLITE 5.558A** **MOBILE 5.558** **SPACE RESEARCH (passive)** **5.547** **5.557**	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Fixed Passive sensors (satellite)	High density fixed links Atmospheric temperature sounding
57 GHz - 58.2 GHz			
EARTH EXPLORATION-SATELLITE (passive) **FIXED** **INTER-SATELLITE 5.556A** **MOBILE 5.558** **SPACE RESEARCH (passive)** **5.547** **5.557**	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Fixed Non-specific SRDs Passive sensors (satellite) Radiodetermination applications Wideband data transmission systems	Un-coordinated deployment. High density fixed links Within the band 57-64 GHz Atmospheric temperature sounding Within the band 57-64 GHz for TLPR and LPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
58.2 GHz - 59 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Fixed	Un-coordinated deployment. High density fixed links
FIXED	FIXED		
MOBILE	SPACE RESEARCH (passive)		
SPACE RESEARCH (passive)	**RADIO ASTRONOMY**	Non-specific SRDs	Within the band 57-64 GHz
5.547	5.547 **PSE3**		
5.556	5.556 **PSE23**	Passive sensors (satellite)	Atmospheric temperature sounding. Terrestrial passive radiometers
		Radio astronomy	Continuum and spectral line observations
		Radiodetermination applications	Within the band 57-64 GHz for TLPR and LPR applications
		Wideband data transmission systems	
59 GHz - 59.3 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Fixed	High density fixed links
FIXED	FIXED		
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A	Non-specific SRDs	Within the band 57-64 GHz
MOBILE 5.558	MOBILE 5.558		
RADIOLOCATION 5.559	RADIOLOCATION 5.559	Passive sensors (satellite)	Atmospheric temperature sounding. Terrestrial passive radiometers
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
		Radiodetermination applications	Within the band 57-64 GHz for TLPR and LPR applications
		Wideband data transmission systems	
59.3 GHz - 64 GHz			
FIXED	FIXED	Fixed	High density fixed links
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558	ISM	Within the band 61.0-61.5 GHz
RADIOLOCATION 5.559	RADIOLOCATION 5.559		
5.138	5.138	ITS	Within the band 63.72 - 65.88 GHz
		Non-specific SRDs	Within the band 57-64 GHz

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiodetermination applications	Within the band 57-64 GHz for TLPR and LPR applications
		Wideband data transmission systems	
64 GHz - 65 GHz			
FIXED	FIXED	Fixed	High density fixed links
INTER-SATELLITE	INTER-SATELLITE		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	ITS	Within the band 63.72 - 65.88 GHz
5.547	5.547		
5.556	5.556	Radio astronomy	Continuum and spectral line observations
		Wideband data transmission systems	
65 GHz - 66 GHz			
EARTH EXPLORATION-SATELLITE	EARTH EXPLORATION-SATELLITE	Fixed	High density fixed links
FIXED	FIXED		
INTER-SATELLITE	INTER-SATELLITE	ITS	Within the band 63.72 - 65.88 GHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
SPACE RESEARCH	SPACE RESEARCH	Land mobile	Broadband mobile systems for connection to IBCN paired with 62-63 GHz
5.547	5.547		
		Wideband data transmission systems	
66 GHz - 71 GHz			
INTER-SATELLITE	INTER-SATELLITE	-	Future civil systems
MOBILE 5.553 5.558 5.559AA	MOBILE 5.553 5.558 5.559AA		
MOBILE-SATELLITE	MOBILE-SATELLITE	Wideband data transmission systems	
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.554	5.554		
71 GHz - 74 GHz			
FIXED	FIXED	Fixed	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)		
74 GHz - 75.5 GHz			
FIXED	FIXED	Fixed	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE	Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
Space research (space-to-Earth)	Space research (space-to-Earth)	Space research	VLBI measurements within the band 74-84 GHz
5.561	5.561		
75.5 GHz - 76 GHz			
FIXED	FIXED	Amateur	Within the band 75.5-81.5 GHz
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	BROADCASTING	Amateur-satellite	Within the band 75.5-81.5 GHz
BROADCASTING	BROADCASTING-SATELLITE		
BROADCASTING-SATELLITE	Amateur	Fixed	
Space research (space-to-Earth)	Amateur-satellite		
5.561	5.561 **PSE19**	Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications
		Space research	VLBI
76 GHz - 77.5 GHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Amateur	Within the band 75.5-81.5 GHz
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur	Amateur-satellite	Within the band 75.5-81.5 GHz
Amateur-satellite	Amateur-satellite		
Space research (space-to-Earth)	Space research (space-to-Earth)	Radio astronomy	Continuum and spectral line observations
5.149	5.149		
		Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications
		Radiolocation (civil)	
		Railway applications	Obstruction/vehicle detection at level crossings
		SRR	

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		TTT	Within the band 76-77 GHz. Ground based vehicle and infrastructure radars. Within the band 76-77 GHz obstacle detection radars for rotorcraft use
77.5 GHz - 78 GHz			
AMATEUR	AMATEUR	Amateur	Within the band 75.5-81.5 GHz
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
RADIOLOCATION 5.559B	RADIOLOCATION 5.559B	Amateur-satellite	Within the band 75.5-81.5 GHz
Radio astronomy	Space research (space-to-Earth)		
Space research (space-to-Earth)	5.149	Radio astronomy	Continuum and spectral line observations
5.149			
		Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications
		SRR	
78 GHz - 79 GHz			
RADIOLOCATION	RADIOLOCATION	Amateur	Within the band 75.5-81.5 GHz
Amateur	Amateur		
Amateur-satellite	Amateur-satellite	Amateur-satellite	Within the band 75.5-81.5 GHz
Radio astronomy	Radio astronomy		
Space research (space-to-Earth)	Space research (space-to-Earth)	Radio astronomy	Continuum and spectral line observations
5.149	5.149		
5.560	5.560	Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications
		Radiolocation (civil)	
		SRR	
79 GHz - 81 GHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Amateur	Within the band 75.5-81.5 GHz
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur	Amateur-satellite	Within the band 75.5-81.5 GHz
Amateur-satellite	Amateur-satellite		
Space research (space-to-Earth)	5.149	Radio astronomy	Continuum and spectral line observations
5.149			
		Radiodetermination applications	Within the band 75-85 GHz for TLPR and LPR applications

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
		Radiolocation (civil)	
		SRR	
81 GHz - 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**	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	Amateur Amateur-satellite Fixed Radio astronomy Radiodetermination applications	Within the band 75.5-81.5 GHz Within the band 75.5-81.5 GHz Continuum and spectral line observations Within the band 75-85 GHz for TLPR and LPR applications
84 GHz - 86 GHz			
FIXED 5.338A **FIXED-SATELLITE (Earth-to-space) 5.561B** **MOBILE** **RADIO ASTRONOMY** **5.149**	FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149	Fixed Radio astronomy Radiodetermination applications	 Continuum and spectral line observations Within the band 75-85 GHz for TLPR and LPR applications
86 GHz - 92 GHz			
EARTH EXPLORATION-SATELLITE (passive) **RADIO ASTRONOMY** **SPACE RESEARCH (passive)** **5.340**	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive sensors (satellite) Radio astronomy	Measurement of clouds, oil spills, ice, snow, rain, reference window for the temperature sounding near 118 GHz Continuum and spectral line observations. VLBI
92 GHz - 94 GHz			
FIXED 5.338A **MOBILE** **RADIO ASTRONOMY** **RADIOLOCATION** **5.149**	FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Fixed Radio astronomy	 Continuum and spectral line observations

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
94 GHz - 94.1 GHz			
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Active sensors (satellite)	Cloud radars
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Radio astronomy	Continuum and spectral line observations
Radio astronomy	Radio astronomy		
5.562	5.562	Space research	
5.562A	5.562A		
94.1 GHz - 95 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION	Radio astronomy	Continuum and spectral line observations
5.149	5.149		
95 GHz - 100 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.149	5.149		
5.554	5.554		
100 GHz - 102 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Limb sounding of atmospheric constituents
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Radio astronomy	Continuum and spectral line observations
5.340	5.340		
5.341	5.341		
102 GHz - 105 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
5.149	5.149		
5.341	5.341		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
105 GHz - 109.5 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B		
5.149	5.149		
5.341	5.341		
109.5 GHz - 111.8 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
5.341	5.341		
111.8 GHz - 114.25 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B		
5.149	5.149		
5.341	5.341		
114.25 GHz - 116 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Radio astronomy	Continuum and spectral line observations
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
5.341	5.341		
116 GHz - 119.98 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing as part of the oxygen absorption band with peak at 118.75 GHz
INTER-SATELLITE 5.562C	INTER-SATELLITE 5.562C		
SPACE RESEARCH (passive)	5.341		
5.341			

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
119.98 GHz - 120.02 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing as part of the oxygen absorption band with peak at 118.75 GHz
INTER-SATELLITE 5.562C	INTER-SATELLITE 5.562C		
SPACE RESEARCH (passive)	5.341		
5.341			
120.02 GHz - 122.25 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Non-specific SRDs	Within the band 122-123 GHz
INTER-SATELLITE 5.562C	INTER-SATELLITE 5.562C		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive sensors (satellite)	Passive sensing as part of the oxygen absorption band with peak at 118.75 GHz
5.138	5.138		
122.25 GHz - 123 GHz			
FIXED	FIXED	Amateur	
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558	Amateur-satellite	
Amateur	Amateur		
5.138	**Amateur-satellite**	Non-specific SRDs	Within the band 122-123 GHz
123 GHz - 130 GHz			
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	Radio astronomy	Continuum and spectral line observations
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
Radio astronomy 5.562D	Radio astronomy		
5.149	5.149		
5.554	5.554		
130 GHz - 134 GHz			
EARTH EXPLORATION-SATELLITE (active) 5.562E	EARTH EXPLORATION-SATELLITE (active) 5.562E	Fixed	
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
5.562A	5.562A		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
134 GHz - 136 GHz			
AMATEUR	AMATEUR	Amateur	Within the band 134-141 GHz
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
Radio astronomy	Radio astronomy	Amateur-satellite	Within the band 134-141 GHz
		Radio astronomy	Continuum and spectral line observations
136 GHz - 141 GHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Amateur	Within the band 134-141 GHz
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur	Amateur-satellite	Within the band 134-141 GHz
Amateur-satellite	Amateur-satellite		
5.149	5.149	Radio astronomy	Continuum and spectral line observations
141 GHz - 148.5 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
RADIOLOCATION	RADIOLOCATION		
5.149	5.149		
148.5 GHz - 151.5 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Harmonised reference window for passive sensor observations
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340	Radio astronomy	Continuum and spectral line observations
151.5 GHz - 155.5 GHz			
FIXED	FIXED	Fixed	
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Continuum and spectral line observations
RADIOLOCATION	RADIOLOCATION		
5.149	5.149		
155.5 GHz - 158.5 GHz			
FIXED	FIXED	Passive sensors (satellite)	
MOBILE	MOBILE		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
RADIO ASTRONOMY	RADIO ASTRONOMY	Radio astronomy	Spectral line and wide band continuum observations
5.149	5.149		
158.5 GHz - 164 GHz			
FIXED	FIXED	Fixed	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
164 GHz - 167 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing of the water vapour absorption line whose peak is at 183.31 GHz. Atmospheric limb sounding of the 164.38 GHz CO line
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
		Radio astronomy	Spectral line and wide band continuum observations
167 GHz - 174.5 GHz			
FIXED	FIXED	Fixed	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
INTER-SATELLITE	INTER-SATELLITE	Radio astronomy	Within the band 168-174.5 GHz. Continuum and spectral line observations
MOBILE 5.558	MOBILE 5.558		
5.149	5.149		
5.562D			
174.5 GHz - 174.8 GHz			
FIXED	FIXED	Fixed	
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		
174.8 GHz - 182 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing of the water vapour absorption line whose peak is at 183.31 GHz
INTER-SATELLITE 5.562H	INTER-SATELLITE 5.562H		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
182 GHz - 185 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing of the water vapour absorption line whose peak is at 183.31 GHz
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
		Radio astronomy	Continuum and spectral line observations
185 GHz - 190 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing of the water vapour absorption line whose peak is at 183.31 GHz
INTER-SATELLITE 5.562H	INTER-SATELLITE 5.562H		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
190 GHz - 191.8 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing of the water vapour absorption line whose peak is at 183.31 GHz
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
		Radio astronomy	Continuum and spectral line observations
191.8 GHz - 200 GHz			
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		
MOBILE-SATELLITE	MOBILE-SATELLITE		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.149	5.149		
5.341	5.341		
5.554	5.554		
200 GHz - 202 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Earth exploration-satellite	(EESS) Atmospheric limb sounding and atmospheric remote sensing of nitrous oxide at 201 GHz
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
5.341	5.341	Radio astronomy	Continuum and spectral line observations
5.563A	5.563A		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
202 GHz - 209 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Earth exploration-satellite	(EESS) Atmospheric limb sounding and atmospheric remote sensing of water vapour at 203.4 GHz and ozone at 208.5 GHz
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
5.341	5.341		
5.563A	5.563A	Radio astronomy	Continuum and spectral line observations
209 GHz - 217 GHz			
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
5.341	5.341		
217 GHz - 226 GHz			
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B		
5.149	5.149		
5.341	5.341		
226 GHz - 231.5 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Atmospheric limb sounding. Reference window for higher frequency water vapour measurements
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
		Radio astronomy	Continuum and spectral line observations (e.g. CO line), VLBI
231.5 GHz - 232 GHz			
FIXED	FIXED		
MOBILE	MOBILE		
Radilocation	Radilocation		

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
232 GHz - 235 GHz			
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		
Radiolocation	Radiolocation		
235 GHz - 238 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive sensors (satellite)	Passive sensing limited to microwave sounding
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Radio astronomy	Continuum and spectral line observations
5.563A	5.563A		
5.563B	5.563B		
238 GHz - 240 GHz			
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
240 GHz - 241 GHz			
FIXED	FIXED		
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION		
241 GHz - 248 GHz			
RADIO ASTRONOMY	RADIO ASTRONOMY	Amateur	Within the band 241-250 GHz
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur	Amateur-satellite	Within the band 241-250GHz
Amateur-satellite	Amateur-satellite		
5.138	5.138	Non-specific SRDs	Within the band 244-246 GHz
5.149	5.149		
		Radio astronomy	Continuum and spectral line observations

ITU RR Region 1 Allocations	*National Allocations*	*Applications*	*Notes*
248 GHz - 250 GHz			
AMATEUR	AMATEUR	Amateur	Within the band 241-250 GHz
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
Radio astronomy	Radio astronomy	Amateur-satellite	Within the band 241-250 GHz
5.149	5.149		
		Radio astronomy	Continuum and spectral line observations
250 GHz - 252 GHz			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Earth exploration-satellite	(EESS) Limb sounding of nitrous oxide near 251 GHz
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Radio astronomy	Continuum and spectral line observations
5.340	5.340		
5.563A	5.563A		
252 GHz - 265 GHz			
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
MOBILE	MOBILE		
MOBILE-SATELITE (Earth-to-space)	MOBILE-SATELITE (Earth-to-space)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.149	5.149		
5.554	5.554		
265 GHz - 275 GHz			
FIXED	FIXED	Radio astronomy	Continuum and spectral line observations
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
5.563A	5.563A		
275 GHz - 3 000 GHz			
(Not allocated) 5.564A	(Not allocated) 5.564A	-	May be used by both active and passive service
5.565	5.565		

12. Palestine National Footnotes

PSE1 A frequency band, which has been alloted for military use

PSE2 In parts of this band aeronautical stations and aircraft stations utilise the preferred 8.33 kHz channel spacing for non secure communications requirements.

PSE3 The mobile-satellite service is limited to low earth orbiting satellites.

PSE4 This band can also be used by low capacity fixed links in rural areas. These links need to be coordinated with mobile service and require full protection.

PSE5 Any use of low capacity fixed links shall be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

PSE6 The range 225-399.9 MHz is in military use for land mobile, mobile-satellite, Air/Ground/Air and specific maritime and terrestrial communications. It is recognised that 380-385 MHz and 390-395 MHz might be shared with narrowband Public Protection and Disaster Relief (PPDR) applications.

PSE7 It might be allowed MFCN for the command and control and payload links of UAS within the current MFCN bands under condition to ensure protection of other existing systems and services in these frequency bands.

PSE8 The frequency bands 890-915 / 935-960 MHz, 880-890 / 925-935 MHz, 1710-1785 / 1805-1880 MHz, 1920-1980 MHz and 2110-2170 MHz are reserved for public cellular mobile use only. Other services such as the fixed service are allowed in the above bands where coexistence with public mobile systems is possible i.e. in sparsely populated or rural areas where the frequency band is not needed for mobile cellular systems.

PSE9 The bands 880-915 MHz and 925-960 MHz are currently used for GSM (2nd generation terrestrial mobile system) and by IMT.

PSE10 It may be authorised all or parts of the band 69.9-70.5 MHz to the amateur service on a secondary basis.

PSE11 Use of the band by the mobile service is limited to tactical radio relay and Video links applications.

PSE12 Use of the band by the mobile service is limited to tactical radio relay and SAP/SAB applications.

PSE13 In the sub-bands 5755-5765 MHz, 10.36-10.37 GHz, 10.45-10.46 GHz the amateur service operates on a secondary basis under condition that the reception of amateur emissions is with minimal power flux densities.

PSE14 Use of the band by the mobile service is limited to Video links.

PSE15 This fixed service band is designated for common use by civil and non civil users. Any user priorities in respect of preferred channels or sub-bands are to be determined after discussions between interested parties.

PSE16 The band 5250-5850 MHz is utilised for a variety of radiodetermination applications falling within the radionavigation and radiolocation services.

PSE17 In the sub-bands 5660-5670 MHz (earth to space), 5830-5850 MHz (space to earth) and 10.45-10.50 GHz the amateur-satellite additionally operates on a secondary and non interference basis to other services under condition that the reception of amateur emissions is with minimal power flux densities.

PSE18 The band 8500-10000 MHz is utilised for a variety of radiodetermination applications falling within the radionavigation and radiolocation services.

PSE19 The band 75.5-76 GHz is also allocated to the Amateur and Amateur Satellite services.

PSE20 The allocation to the mobile service is limited to the band 3400-3800 MHz.

PSE21 It is not allowed deployment of high-density mobile systems incl. high-density fixed wireless access in the 22.0-23.6 GHz frequency band.

PSE22 The band 13.25-14.0 GHz is utilised for a variety of radiodetermination applications falling within the radionavigation and radiolocation services.

PSE23 This band is allocated to the radio astronomy service. All practicable steps are necessary to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations in this and adjacent bands can cause serious harmful interference.

PSE24 Parts of the bands 450-457.5/460-467.5 MHz may also be used for public cellular networks on a national basis.

PSE25 It is allowed to allocate up to 200 kHz to amateur service in the frequency bands 1 715-1 800 kHz and 1 850 2 000 kHz, under condition that after prior consultation with administrations of neighbouring countries are undertaken such steps as may be necessary to prevent harmful interference from amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

PSE26 The frequency band 47-68 MHz is also allocated to the land mobile service on a primary basis. However, stations of the land mobile service shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.

PSE27 The band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service.

PSE28 The allocation of the band 137-138 MHz to the fixed and mobile services is on a primary basis.

PSE29 The band 174-223 MHz is also allocated to the land mobile service on a primary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.

PSE30 The band 223-230 MHz is allocated to the broadcasting and land mobile services on a primary basis on the basis that, in the preparation of frequency plans, the broadcasting service shall have prior choice of frequencies; and allocated to the fixed and mobile, except land mobile, services on a secondary basis.

PSE31 The allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis.

PSE32 The sub-bands 438.5 to 440 MHz is assigned for exclusive use for mobile services of civil and commercial trunking networks – PMR/PAMR.

PSE33 The frequency 675 kHz is assigned for AM radio station.

13. ITU Radio Regulations Footnotes applicable to Region1 (Article 5 – Section 4)

5.53 Administrations authorizing the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused to services to which the bands above 8.3 kHz are allocated. (WRC-12)

5.54 Administrations conducting scientific research using frequencies below 8.3 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference. (WRC-12)

5.54A Use of the 8.3-11.3 kHz frequency band by stations in the meteorological aids service is limited to passive use only. In the band 9-11.3 kHz, meteorological aids stations shall not claim protection from stations of the radionavigation service submitted for notification to the Bureau prior to 1 January 2013. For sharing between stations of the meteorological aids service and stations in the radionavigation service submitted for notification after this date, the most recent version of Recommendation ITU-R RS.1881 should be applied. (WRC-12)

5.54B **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Morocco, Qatar, the Syrian Arab Republic, Sudan and Tunisia, the frequency band 8.3-9 kHz is also allocated to the radionavigation, fixed and mobile services on a primary basis. (WRC-15)

5.54C **Additional allocation**: in China, the frequency band 8.3-9 kHz is also allocated to the maritime radionavigation and maritime mobile services on a primary basis. (WRC-12)

5.55 **Additional allocation**: in Armenia, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequency band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-15)

5.56 The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-12)

5.57 The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the band concerned.

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

5.60 In the bands 70-90 kHz (70-86 kHz in Region 1) and 110-130 kHz (112-130 kHz in Region 1), pulsed radionavigation systems may be used on condition that they do not cause harmful interference to other services to which these bands are allocated.

5.62 Administrations which operate stations in the radionavigation service in the band 90-110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.

5.64 Only classes A1A or F1B, A2C, A3C, F1C or F3C emissions are authorized for stations of the fixed service in the bands allocated to this service between 90 kHz and 160 kHz (148.5 kHz in Region 1) and for stations of the maritime mobile service in the bands allocated to this service between 110 kHz and 160 kHz (148.5 kHz in Region 1). Exceptionally, class J2B or J7B emissions are also authorized in the bands between 110 kHz and 160 kHz (148.5 kHz in Region 1) for stations of the maritime mobile service.

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

5.67 **Additional allocation:** in Kyrgyzstan and Turkmenistan, the frequency band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-19)

5.67A Stations in the amateur service using frequencies in the band 135.7-137.8 kHz shall not exceed a maximum radiated power of 1 W (e.i.r.p.) and shall not cause harmful interference to stations of the radionavigation service operating in countries listed in No. 5.67. (WRC-07)

5.67B The use of the frequency band 135.7-137.8 kHz in Algeria, Egypt, Iraq, Lebanon, Syrian Arab Republic, Sudan, South Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the above-mentioned countries in the frequency band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-19)

5.68 **Alternative allocation**: in Congo (Rep. of the), the Dem. Rep. of the Congo and South Africa, the frequency band 160-200 kHz is allocated to the fixed service on a primary basis. (WRC-15)

5.69 **Additional allocation**: in Somalia, the band 200-255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.

5.70 **Alternative allocation**: in Angola, Botswana, Burundi, the Central African Rep., Congo (Rep. of the), Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, South Africa, Tanzania, Chad, Zambia and Zimbabwe, the frequency band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-19)

5.73 The band 285-325 kHz (283.5-325 kHz in Region 1) in the maritime radionavigation service may be used to transmit supplementary navigational information using narrow-band techniques, on condition that no harmful interference is caused to radiobeacon stations operating in the radionavigation service. (WRC-97)

5.74 **Additional Allocation**: in Region 1, the frequency band 285.3-285.7 kHz is also allocated to the maritime radionavigation service (other than radiobeacons) on a primary basis.

5.75 **Different category of service**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Romania, the allocation of the band 315 325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned. (WRC 07)

5.76 The frequency 410 kHz is designated for radio direction - finding in the maritime radionavigation service. The other radionavigation services to which the band 405-415 kHz is allocated shall not cause harmful interference to radio direction - finding in the band 406.5-413.5 kHz.

5.77 **Different category of service**: in Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea, the Dem. People's Rep. of Korea and Sri Lanka, the allocation of the frequency band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan, the allocation of the frequency band 435-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in all the aforementioned countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the frequency band 435-495 kHz do not cause interference to reception by coast stations of transmissions from ship stations on frequencies designated for ship stations on a worldwide basis. (WRC-19)

5.79 In the maritime mobile service, the frequency bands 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy and may also be used for the NAVDAT system in accordance with the most recent version of Recommendation ITU-R M.2010, subject to agreement between interested and affected administrations. NAVDAT transmitting stations are limited to coast stations. (WRC-19)

5.79A When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution 339 (Rev.WRC-07)). (WRC-07)

5.80 In Region 2, the use of the band 435-495 kHz by the aeronautical radionavigation service is limited to non-directional beacons not employing voice transmission.

5.80A The maximum equivalent isotropically radiated power (e.i.r.p.) of stations in the amateur service using frequencies in the band 472-479 kHz shall not exceed 1 W. Administrations may increase this limit of e.i.r.p. to 5 W in portions of their territory which are at a distance of over 800 km from the borders of Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia, Ukraine and Yemen. In this frequency band, stations in the amateur service shall

not cause harmful interference to, or claim protection from, stations of the aeronautical radionavigation service. (WRC-12)

5.80B The use of the frequency band 472-479 kHz in Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia and Yemen is limited to the maritime mobile and aeronautical radionavigation services. The amateur service shall not be used in the above-mentioned countries in this frequency band, and this should be taken into account by the countries authorizing such use. (WRC-12)

5.82 In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the frequency band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. In using the frequency band 472-479 kHz for the amateur service, administrations shall ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-12)

5.82C The frequency band 495-505 kHz is used for the international NAVDAT system as described in the most recent version of Recommendation ITU-R M.2010. NAVDAT transmitting stations are limited to coast stations. (WRC-19)

5.84 The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles 31 and 52. (WRC-07)

5.87 **Additional allocation**: in Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia and Niger, the frequency band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-19)

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

5.90 In the band 1 605-1 705 kHz, in cases where a broadcasting station of Region 2 is concerned, the service area of the maritime mobile stations in Region 1 shall be limited to that provided by ground-wave propagation.

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

5.93 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also allocated to the fixed and

land mobile services on a primary basis, subject to agreement obtained under No. 9.21. (WRC-15)

5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Croatia, Denmark, Estonia, the Russian Federation, Finland, Georgia, Hungary, Ireland, Iceland, Israel, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the frequency bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the frequency bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-15)

5.98 **Alternative allocation**: in Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan and Turkey, the frequency band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

5.99 **Additional allocation**: in Saudi Arabia, Austria, Iraq, Libya, Uzbekistan, Slovakia, Romania, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

5.100 In Region 1, the authorization to use the band 1 810-1 830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. 5.98 and 5.99 to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. 5.98 and 5.99.

5.103 In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1 850-2 045 kHz, 2 194-2 498 kHz, 2 502-2 625 kHz and 2 650-2 850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.

5.104 In Region 1, the use of the band 2 025-2 045 kHz by the meteorological aids service is limited to oceanographic buoy stations.

5.107 **Additional allocation**: in Saudi Arabia, Eritrea, Eswatini, Ethiopia, Iraq, Libya and Somalia, the frequency band 2 160-2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-19)

5.108 The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles 31 and 52. (WRC-07)

5.109 The frequencies 2 187.5 kHz, 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz are international distress frequencies for digital selective calling. The conditions for the use of these frequencies are prescribed in Article 31.

5.110 The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article 31.

5.111 The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article 31. The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ±3 kHz about the frequency. (WRC-07)

5.112 **Alternative allocation**: in Sri Lanka, the frequency band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.113 For the conditions for the use of the bands 2 300-2 495 kHz (2 498 kHz in Region 1), 3 200-3 400 kHz, 4 750-4 995 kHz and 5 005-5 060 kHz by the broadcasting service, see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10.

5.114 **Alternative allocatio**n: in Iraq, the frequency band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.115 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article 31, by stations of the maritime mobile service engaged in coordinated search and rescue operations. (WRC-07)

5.116 Administrations are urged to authorize the use of the band 3 155-3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3 400 kHz to suit local needs. It should be noted that frequencies in the range 3 000 kHz to 4 000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

5.117 **Alternative allocation**: in Côte d'Ivoire, Egypt, Liberia, Sri Lanka and Togo, the frequency band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.118 **Additional allocation:** in the United States, Mexico and Peru, the frequency band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-19)

5.123 **Additional allocation**: in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency band 3 900-3 950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-19)

5.125 **Additional allocation**: in Greenland, the band 3 950-4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations

operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

5.127 The use of the band 4 000-4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. 52.220 and Appendix 17).

5.128 Frequencies in the frequency bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the frequency bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-19)

5.130 The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles 31 and 52. (WRC-07)

5.131 The frequency 4 209.5 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing techniques. (WRC-97)

5.132 The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix 17).

5.132A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution 612 (Rev.WRC-12). (WRC-12)

5.132B **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 4 438-4 488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)

5.133 **Different category of service**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Niger, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 130-5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33). (WRC-12)

5.133A **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5 250-5 275 kHz and 26 200-26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.133B Stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile,

Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas countries and territories within the Kingdom of the Netherlands in Region 2, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC-19)

5.134 The use of the frequency bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article 12. Administrations are encouraged to use these frequency bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution 517 (Rev.WRC-19). (WRC-19)

5.136 **Additional allocation**: frequencies in the band 5 900-5 950 kHz may be used by stations in the following services, communicating only within the boundary of the country in which they are located: fixed service (in all three Regions), land mobile service (in Region 1), mobile except aeronautical mobile (R) service (in Regions 2 and 3), on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

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

5.138 The following bands: 6765-6795 kHz (centre frequency 6780 kHz), 433.05-434.79 MHz (centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. 5.280, 61-61.5 GHz (centre frequency 61.25 GHz), 122-123 GHz (centre frequency 122.5 GHz), and 244-246 GHz (centre frequency 245 GHz) are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

5.140 **Additional allocation**: in Angola, Iraq, Somalia and Togo, the frequency band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-15)

5.141 **Alternative allocation**: in Egypt, Eritrea, Ethiopia, Guinea, Libya, Madagascar and Niger, the band 7 000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-12)

5.141A **Additional allocation**: in Uzbekistan and Kyrgyzstan, the bands 7 000-7 100 kHz and 7 100-7 200 kHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)

5.141B **Additional allocation**: in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Guinea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)

5.142 The use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-12)

5.143 **Additional allocation**: frequencies in the band 7 300-7 350 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

5.143A In Region 3, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed service on a primary basis and land mobile service on a secondary basis, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

5.143B In Region 1, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located on condition that harmful interference is not caused to the broadcasting service. The total radiated power of each station shall not exceed 24 dBW. (WRC-12)

5.143C **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Morocco, Mauritania, Niger, Oman, Qatar, the Syrian Arab Republic, Sudan, South Sudan, Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-12)

5.143D In Region 2, frequencies in the band 7 350-7 400 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

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

5.145 The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles 31 and 52. (WRC-07)

5.145A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed service. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution 612 (Rev.WRC-12). (WRC-12)

5.145B **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 9 305-9 355 kHz and 16 100-16 200 kHz are allocated to the fixed service on a primary basis. (WRC-19)

5.146 **Additional allocation**: frequencies in the bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

5.147 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775-9 900 kHz, 11 650-11 700 kHz and 11 975-12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.

5.149 In making assignments to stations of other services to which the bands: 13360-13410 kHz, 25550-25670 kHz, 37.5-38.25 MHz, 73-74.6 MHz in Regions 1 and 3, 150.05-153 MHz in Region 1, 322-328.6 MHz, 406.1-410 MHz, 608-614 MHz in Regions 1 and 3, 1330-1400 MHz, 1610.6-1613.8 MHz, 1660-1670 MHz, 1718.8-1722.2 MHz, 2655-2690 MHz, 3260-3267 MHz, 3332-3339 MHz, 3345.8-3352.5 MHz, 4825-4835 MHz, 4950-4990 MHz, 4990-5000 MHz, 6650-6675.2 MHz, 10.6-10.68 GHz, 14.47-14.5 GHz, 22.01-22.21 GHz, 22.21-22.5 GHz, 22.81-22.86 GHz, 23.07-23.12 GHz, 31.2-31.3 GHz, 31.5-31.8 GHz in Regions 1 and 3, 36.43-36.5 GHz, 42.5-43.5 GHz, 48.94-49.04 GHz, 76-86 GHz, 92-94 GHz, 94.1-100 GHz, 102-109.5 GHz, 111.8-114.25 GHz, 128.33-128.59 GHz, 129.23-129.49 GHz, 130-134 GHz, 136-148.5 GHz, 151.5-158.5 GHz, 168.59-168.93 GHz, 171.11-171.45 GHz, 172.31-172.65 GHz, 173.52-173.85 GHz, 195.75-196.15 GHz, 209-226 GHz, 241-250 GHz, 252-275 GHz are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29). (WRC-07)

5.149A **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 13 450-13 550 kHz is allocated to the fixed service on a primary basis and to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-19)

5.150 The following bands: 13553-13567 kHz (centre frequency 13560 kHz), 26957-27283 kHz (centre frequency 27120 kHz), 40.66-40.70 MHz (centre frequency 40.68 MHz), 902-928 MHz in Region 2 (centre frequency 915 MHz), 2400-2500 MHz (centre frequency 2450 MHz), 5725-5875 MHz (centre frequency 5800 MHz), and 24-24.25 GHz (centre frequency 24.125 GHz) are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. 15.13.

5.151 **Additional allocation**: frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

5.152 **Additional allocation**: in Armenia, Azerbaijan, China, Côte d'Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)

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

5.154 **Additional allocation**: in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-03)

5.155 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis. (WRC-07)

5.155A In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-07)

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

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

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

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

5.158 **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 24 450-24 600 kHz is allocated to the fixed and land mobile services on a primary basis. (WRC-19)

5.159 **Alternative allocation**: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 39-39.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)

5.160 **Additional allocation**: in Botswana, Burundi, Dem. Rep. of the Congo and Rwanda, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

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

5.161A **Additional allocation**: in Korea (Rep. of), the United States and Mexico, the frequency bands 41.015-41.665 MHz and 43.35-44 MHz are also allocated to the radiolocation service on a primary basis. Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution 612 (Rev.WRC-12). (WRC-19)

5.161B **Alternative allocation**: in Albania, Germany, Armenia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Vatican, Croatia, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Netherlands, Portugal, Kyrgyzstan, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland, Turkey and Ukraine, the frequency band 42-42.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)

5.162 **Additional allocation:** in Australia, the band 44-47 MHz is also allocated to the broadcasting service on a primary basis. (WRC 12)

5.162A **Additional allocation**: in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (WRC-97). (WRC-19)

5.163 **Additional allocation**: in Armenia, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-19)

5.164 **Additional allocation**: in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Eswatini, Finland, France, Gabon, Greece, Hungary, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian

Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency bands 48.5-56.5 MHz and 58-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band. (WRC-19) ASMG

5.165 **Additional allocation**: in Angola, Cameroon, Congo (Rep. of the), Egypt, Madagascar, Mozambique, Niger, Somalia, Sudan, South Sudan, Tanzania and Chad, the frequency band 47-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.166A **Different category of service**: in Austria, Cyprus, the Vatican, Croatia, Denmark, Spain, Finland, Hungary, Latvia, the Netherlands, the Czech Republic, the United Kingdom, Slovakia and Slovenia, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in these countries shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50.0-50.5 MHz in the countries not listed in this provision. For a station of these services, the protection criteria in No. 5.169B shall also apply. In Region 1, with the exception of those countries listed in No. 5.169, wind profiler radars operating in the radiolocation service under No. 5.162A are authorized to operate on the basis of equality with stations in the amateur service in the frequency band 50.0-50.5 MHz. (WRC-19)

5.166B In Region 1, stations in the amateur service operating on a secondary basis shall not cause harmful interference to, or claim protection from, stations of the broadcasting service. The field strength generated by an amateur station in Region 1 in the frequency band 50-52 MHz shall not exceed a calculated value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the border of a country with operational analogue broadcasting stations in Region 1 and of neighbouring countries with broadcasting stations in Region 3 listed in Nos. 5.167 and 5.168. (WRC-19)

5.166C In Region 1, stations in the amateur service in the frequency band 50-52 MHz, with the exception of those countries listed in No. 5.169, shall not cause harmful interference to, or claim protection from, wind profiler radars operating in the radiolocation service under No. 5.162A. (WRC-19)

5.166D **Different category of service**: in Lebanon, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in Lebanon shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50-52 MHz in the countries not listed in this provision. (WRC-19)

5.166E In the Russian Federation, only the frequency band 50.080-50.280 MHz is allocated to the amateur service on a secondary basis. The protection criteria for the other services in the countries not listed in this provision are specified in Nos. 5.166B and 5.169B. (WRC-19)

5.169 **Alternative allocation**: in Botswana, Eswatini, Lesotho, Malawi, Namibia, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Senegal, the frequency band 50-51 MHz is allocated to the amateur service on a primary basis. (WRC-19)

5.169A **Alternative allocation**: in the following countries in Region 1: Angola, Saudi Arabia, Bahrain, Burkina Faso, Burundi, the United Arab Emirates, Gambia, Jordan, Kenya, Kuwait, Mauritius, Mozambique, Oman, Uganda, Qatar, South Sudan and Tanzania, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Guinea-Bissau, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. In Djibouti, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. With the exception of those countries listed in No. 5.169, stations in the amateur service operating in Region 1 under this footnote, in all or part of the frequency band 50-54 MHz, shall not cause harmful interference to, or claim protection from, stations of other services operating in accordance with the Radio Regulations in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Israel, Libya, **Palestine**, the Syrian Arab Republic, the Dem. People's Republic of Korea, Sudan and Tunisia. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of listed countries requiring protection. (WRC-19

5.169B Except countries listed under No. 5.169, stations in the amateur service used in Region 1, in all or part of the 50-54 MHz frequency band, shall not cause harmful interference to, or claim protection from, stations of other services used in accordance with the Radio Regulations in Algeria, Armenia, Azerbaijan, Belarus, Egypt, Russian Federation, Iran (Islamic Republic of), Iraq, Kazakhstan, Kyrgyzstan, Libya, Uzbekistan, **Palestine**, the Syrian Arab Republic, Sudan, Tunisia and Ukraine. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of the countries listed in this provision. (WRC-19)

5.171 **Additional allocation**: in Botswana, Eswatini, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.175 **Alternative allocatio**n: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. In Latvia and Lithuania, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-07)

5.177 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-07)

5.179 **Additional allocation**: in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-12)

5.180 The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons. Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

5.181 **Additional allocatio**n: in Egypt, Israel and the Syrian Arab Republic, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration, which may be identified in the application of the procedure invoked under No. 9.21. (WRC-03)

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

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

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

5.194 **Additional allocation**: in Kyrgyzstan, Somalia and Turkmenistan, the frequency band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-19)

5.197 **Additional allocation**: in the Syrian Arab Republic, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. 9.21. (WRC-12)

5.197A **Additional allocation**: the band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 413 (Rev.WRC-07). The use of the band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air

navigation functions in accordance with recognized international aeronautical standards. (WRC-07)

5.200 In the band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article 31 for distress and safety purposes with stations of the aeronautical mobile service. (WRC-07)

5.201 **Additional allocation**: in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Mali, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-19)

5.202 **Additional allocation**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Mali, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-19) ASMG

5.203C The use of the space operation service (space-to-Earth) with non-geostationary satellite short-duration mission systems in the frequency band 137-138 MHz is subject to Resolution 660 (WRC-19). Resolution 32 (WRC-19) applies. These systems shall not cause harmful interference to, or claim protection from, the existing services to which the frequency band is allocated on a primary basis. (WRC-19)

5.204 **Different category of service**: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Singapore, Thailand and Yemen, the frequency band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. 5.33). (WRC-19)

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

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

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

5.208 The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. (WRC-97)

5.208A In making assignments to space stations in the mobile-satellite service in the frequency bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz and in the maritime mobile-satellite service (space-to-Earth) in the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the frequency bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions as shown in the most recent version of Recommendation ITU-R RA.769. (WRC-19)

5.208B In the frequency bands: 137-138 MHz 387-390 MHz 400.15-401 MHz 1452-1492 MHz 1525-1610 MHz 1613.8-1626.5 MHz 2655-2690 MHz 21.4-22 GHz. Resolution 739 (Rev.WRC-15) applies. (WRC-15). This provision was previously numbered as No. 5.347A. It was renumbered to preserve the sequential order. (WRC-19)

5.209 The use of the bands 137-138 MHz, 148-150.05 MHz, 399.9-400.05 MHz, 400.15-401 MHz, 454-456 MHz and 459-460 MHz by the mobile-satellite service is limited to non-geostationary-satellite systems. (WRC-97)

5.209A The use of the frequency band 137.175-137.825 MHz by non-geostationary-satellite systems in the space operation service identified as short-duration mission in accordance with Appendix 4 is not subject to No. 9.11A. (WRC-19)

5.210 **Additional allocation**: in Italy, the Czech Rep. and the United Kingdom, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-07)

5.211 **Additional allocation**: in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Guinea, Ireland, Israel, Kenya, Kuwait, Lebanon, Liechtenstein, Luxembourg, North Macedonia, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the frequency band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-19)

5.212 **Alternative allocatio**n: in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Niger, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Chad, Togo, Zambia and Zimbabwe, the frequency band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)

5.214 **Additional allocation**: in Eritrea, Ethiopia, Kenya, North Macedonia, Montenegro, Serbia, Somalia, Sudan, South Sudan and Tanzania, the frequency band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-19)

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

5.218 **Additional allocation**: the band 148-149.9 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21. The bandwidth of any individual transmission shall not exceed ± 25 kHz.

5.218A The frequency band 148-149.9 MHz in the space operation service (Earth-to-space) may be used by non-geostationary-satellite systems with short-duration missions. Non-geostationary-satellite systems in the space operation service used for a short-duration mission in accordance with Resolution 32 (WRC-19) of the Radio Regulations are not subject to agreement under No. 9.21. At the stage of coordination, the provisions of Nos. 9.17 and 9.18 also apply. In the frequency band 148-149.9 MHz, non-geostationary-satellite systems with short-duration missions shall not cause unacceptable interference to, or claim protection from, existing primary services within this frequency band, or impose additional constraints on the space operation and mobile-satellite services. In addition, earth stations in non-geostationary-satellite systems in the space operation service with short-duration missions in the frequency band 148-149.9 MHz shall ensure that the power flux-density does not exceed −149 dB(W/(m2 # 4 kHz)) for more than 1% of time at the border of the territory of the following countries: Armenia, Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, Russian Federation, India, Iran (Islamic Republic of), Japan, Kazakhstan, Malaysia, Uzbekistan, Kyrgyzstan, Thailand and Viet Nam. In case this power flux-density limit is exceeded, agreement under No. 9.21 is required to be obtained from countries mentioned in this footnote. (WRC-19)

5.219 The use of the frequency band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the frequency band 148-149.9 MHz. The use of the frequency band 148-149.9 MHz by non-geostationary-satellite systems in the space operation service identified as short-duration mission is not subject to No. 9.11A. (WRC-19)

5.220 The use of the frequency bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. (WRC-15)

5.221 Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Eswatini, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland,

Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-19

5.225A **Additional allocation**: in Algeria, Armenia, Azerbaijan, Belarus, China, the Russian Federation, France, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Viet Nam, the frequency band 154-156 MHz is also allocated to the radiolocation service on a primary basis. The usage of the frequency band 154-156 MHz by the radiolocation service shall be limited to space-object detection systems operating from terrestrial locations. The operation of stations in the radiolocation service in the frequency band 154-156 MHz shall be subject to agreement obtained under No. 9.21. For the identification of potentially affected administrations in Region 1, the instantaneous field-strength value of 12 dB(μV/m) for 10% of the time produced at 10 m above ground level in the 25 kHz reference frequency band at the border of the territory of any other administration shall be used. For the identification of potentially affected administrations in Region 3, the interference-to-noise ratio (I/N) value of −6 dB (N = −161 dBW/4 kHz), or −10 dB for applications with greater protection requirements, such as public protection and disaster relief (PPDR (N = −161 dBW/4 kHz)), for 1% of the time produced at 60 m above ground level at the border of the territory of any other administration shall be used. In the frequency bands 156.7625-156.8375 MHz, 156.5125-156.5375 MHz, 161.9625-161.9875 MHz, 162.0125-162.0375 MHz, out-of-band e.i.r.p. of space surveillance radars shall not exceed −16 dBW. Frequency assignments to the radiolocation service under this allocation in Ukraine shall not be used without the agreement of Moldova. (WRC-12)

5.226 The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles 31 and 52, and in Appendix 18. The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article 31 and Appendix 18. In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 18). Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service. However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)

5.227 **Additional allocation**: the bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis. The use of these bands by the fixed and land mobile services shall not cause harmful interference to

nor claim protection from the maritime mobile VHF radiocommunication service. (WRC-07)

5.228 The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long-range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency bands by systems operating in the maritime mobile service for communications shall not exceed 1 W. (WRC-12)

5.228A The frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz may be used by aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)

5.228AA The use of the frequency bands 161.9375-161.9625 MHz and 161.9875-162.0125 MHz by the maritime mobile-satellite (Earth-to-space) service is limited to the systems which operate in accordance with Appendix 18. (WRC-15)

5.228AB The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (Earth-to-space) is limited to non-geostationary-satellite systems operating in accordance with Appendix 18. (WRC-19)

5.228AC The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (space-to-Earth) is limited to non-geostationary-satellite systems operating in accordance with Appendix 18. Such use is subject to agreement obtained under No. 9.21 with respect to the terrestrial services in Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, the Russian Federation, the Syrian Arab Republic, the Dem. People's Rep. of Korea, South Africa and Viet Nam. (WRC-19)

5.228B The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the fixed and land mobile services shall not cause harmful interference to, or claim protection from, the maritime mobile service. (WRC-12)

5.228C The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS). The use of these frequency bands by the aeronautical mobile (OR) service is limited to AIS emissions from search and rescue aircraft operations. The AIS operations in these frequency bands shall not constrain the development and use of the fixed and mobile services operating in the adjacent frequency bands. (WRC-12)

5.228D The frequency bands 161.9625-161.9875 MHz (AIS 1) and 162.0125-162.0375 MHz (AIS 2) may continue to be used by the fixed and mobile services on a primary basis until 1 January 2025, at which time this allocation shall no longer be valid. Administrations are encouraged to make all practicable efforts to discontinue the use of these bands by the fixed and mobile services prior to the transition date. During this transition period, the maritime mobile service in these frequency bands has priority over the fixed, land mobile and aeronautical mobile services. (WRC-12)

5.228E The use of the automatic identification system in the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the aeronautical mobile (OR) service is

limited to aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)

5.228F The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system emissions from stations operating in the maritime mobile service. (WRC-12)

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

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

5.237 **Additional allocation**: in Congo (Rep. of the), Egypt, Eritrea, Ethiopia, Gambia, Guinea, Libya, Mali, Sierra Leone, Somalia and Chad, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

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

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

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

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

5.252 **Alternative allocation**: in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-19)

5.254 The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. 9.21, on condition that stations in this

service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. 5.256A. (WRC-03)

5.255 The bands 312-315 MHz (Earth-to-space) and 387-390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-geostationary-satellite systems. Such use is subject to coordination under No. 9.11A.

5.256 The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes. (WRC-07)

5.256A **Additional allocation**: in China, the Russian Federation and Kazakhstan, the frequency band 258-261 MHz is also allocated to the space research service (Earth-to-space) and space operation service (Earth-to-space) on a primary basis. Stations in the space research service (Earth-to-space) and space operation service (Earth-to-space) shall not cause harmful interference to, or claim protection from, or constrain the use and development of, the mobile service systems and mobile-satellite service systems operating in the frequency band. Stations in space research service (Earth-to-space) and space operation service (Earth-to-space) shall not constrain the future development of fixed service systems of other countries. (WRC-15)

5.257 The band 267-272 MHz may be used by administrations for space telemetry in their countries on a primary basis, subject to agreement obtained under No. 9.21.

5.258 The use of the band 328.6-335.4 MHz by the aeronautical radionavigation service is limited to Instrument Landing Systems (glide path).

5.259 **Additional allocation**: in Egypt and the Syrian Arab Republic, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. 9.21. (WRC-12)

5.260A In the frequency band 399.9-400.05 MHz, the maximum e.i.r.p. of any emission of earth stations in the mobile-satellite service shall not exceed 5 dBW in any 4 kHz band and the maximum e.i.r.p. of each earth station in the mobile-satellite service shall not exceed 5 dBW in the whole 399.9-400.05 MHz frequency band. Until 22 November 2022, this limit shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2022, these limits shall apply to all systems within the mobile-satellite service operating in this frequency band. In the frequency band 399.99-400.02 MHz, the e.i.r.p. limits as specified above shall apply after 22 November 2022 to all systems within the mobile-satellite service. Administrations are requested that their mobile-satellite service satellite links in the 399.99-400.02 MHz frequency band comply with the e.i.r.p. limits as specified above, after 22 November 2019. (WRC-19)

5.260B In the frequency band 400.02-400.05 MHz, the provisions of No. 5.260A are not applicable for telecommand uplinks within the mobile-satellite service. (WRC-19)

5.261 Emissions shall be confined in a band of ±25 kHz about the standard frequency 400.1 MHz.

5.262 **Additional allocation**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Singapore, Somalia, Tajikistan, Chad, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12) ASMG

5.263 The band 400.15-401 MHz is also allocated to the space research service in the space-to-space direction for communications with manned space vehicles. In this application, the space research service will not be regarded as a safety service.

5.264 The use of the band 400.15-401 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The power flux-density limit indicated in Annex 1 of Appendix 5 shall apply until such time as a competent world radiocommunication conference revises it.

5.264A In the frequency band 401-403 MHz, the maximum e.i.r.p. of any emission of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW in any 4 kHz band for geostationary-satellite systems and non-geostationary-satellite systems with an orbit of apogee equal or greater than 35 786 km. The maximum e.i.r.p. of any emission of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW in any 4 kHz band for non-geostationary-satellite systems with an orbit of apogee lower than 35 786 km. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW for geostationary-satellite systems and non-geostationary-satellite systems with an orbit of apogee equal or greater than 35 786 km in the whole 401-403 MHz frequency band. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW for non-geostationary-satellite systems with an orbit of apogee lower than 35 786 km in the whole 401-403 MHz frequency band. Until 22 November 2029, these limits shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2029, these limits shall apply to all systems within the meteorological-satellite service and the Earth exploration-satellite service operating in this frequency band. (WRC-19)

5.264B Non-geostationary-satellite systems in the meteorological-satellite service and the Earth exploration-satellite service for which complete notification information has been received by the Radiocommunication Bureau before 28 April 2007 are exempt from provisions of No. 5.264A and may continue to operate in the frequency band 401.898-402.522 MHz on a primary basis without exceeding a maximum e.i.r.p. level of 12 dBW. (WRC-19)

5.265 In the frequency band 403-410 MHz, Resolution 205 (Rev.WRC-19) applies. (WRC-19)

5.266 The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radiobeacons (see also Article 31). (WRC-07)

5.267 Any emission capable of causing harmful interference to the authorized uses of the band 406-406.1 MHz is prohibited.

5.268 Use of the frequency band 410-420 MHz by the space research service is limited to space-to-space communication links with an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from transmitting stations of the space research service (space-to-space) in the frequency band 410-420 MHz shall not exceed −153 dB(W/m2) for 0° £ d £ 5°, −153 + 0.077 (d − 5) dB(W/m2) for 5° £ d £ 70° and −148 dB(W/m2) for 70° £ d £ 90°, where d is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. In this frequency band, stations of the space research service (space-to-space) shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. 4.10 does not apply. (WRC-15)

5.269 Different category of service: in Australia, the United States, India, Japan and the United Kingdom, the allocation of the bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. 5.33).

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

5.271 **Additional allocation**: in Belarus, China, India, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-07)

5.274 **Alternative allocation**: in Denmark, Norway, Sweden and Chad, the bands 430-432 MHz and 438-440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

5.275 **Additional allocation**: in Croatia, Estonia, Finland, Libya, North Macedonia, Montenegro and Serbia, the frequency bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.276 **Additional allocation**: in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Djibouti, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Libya, Malaysia, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Switzerland, Thailand, Togo, Turkey and Yemen, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis and the frequency bands 430-435 MHz and 438-440 MHz are also allocated, except in Ecuador, to the mobile, except aeronautical mobile, service on a primary basis. (WRC-15)

5.277 **Additional allocation**: in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda,

Tajikistan, Chad, Turkmenistan and Ukraine, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.279A The use of the frequency band 432-438 MHz by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU-R RS.1260-2. Additionally, the Earth exploration-satellite service (active) in the frequency band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. 5.29 and 5.30. (WRC-19)

5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, Liechtenstein, North Macedonia, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the frequency band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this frequency band must accept harmful interference which may be caused by these applications. ISM equipment operating in this frequency band is subject to the provisions of No. 15.13. (WRC-19)

5.281 **Additional allocation**: in the French overseas departments and communities in Region 2 and India, the band 433.75-434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.

5.282 In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650-5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. 5.43). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. 25.11. The use of the bands 1 260-1 270 MHz and 5 650-5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

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

5.284 **Additional allocation:** in Canada, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.

5.285 **Different category of service:** in Canada, the allocation of the band 440-450 MHz to the radiolocation service is on a primary basis (see No. 5.33).

5.286 The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. 9.21.

5.286A The use of the bands 454-456 MHz and 459-460 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. (WRC-97)

5.286AA The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) - see Resolution 224 (Rev.WRC-19). This identification does not preclude the use of this frequency band by

any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.286B The use of the band 454-455 MHz in the countries listed in No. 5.286D, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. 5.286E, by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)

5.286C The use of the band 454-455 MHz in the countries listed in No. 5.286D, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. 5.286E, by stations in the mobile-satellite service, shall not constrain the development and use of the fixed and mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)

5.286D **Additional allocation**: in Canada, the United States and Panama, the band 454 455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (WRC-07)

5.286E **Additional allocation**: in Cape Verde, Nepal and Nigeria, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. (WRC-07)

5.287 Use of the frequency bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU-R M.1174-4. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned. (WRC-19)

5.288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU R M.1174 4. (WRC 19)

5.289 Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz and 1 690-1 710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table.

5.290 **Different category of service**: in Afghanistan, Azerbaijan, Belarus, China, the Russian Federation, Japan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 460-470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. (WRC-12)

5.291A **Additional allocation**: in Germany, Austria, Denmark, Estonia, Liechtenstein, the Czech Rep., Serbia and Switzerland, the frequency band 470-494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (WRC-97). (WRC-15)

5.294 **Additional allocation**: in Saudi Arabia, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, Libya, the Syrian Arab Republic, Chad and Yemen, the frequency band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-15)

5.296 **Additional allocation**: in Albania, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Eswatini, Finland, France, Gabon, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, Romania, the United Kingdom, Rwanda, San Marino, Serbia, Sudan, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the frequency band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-19)

5.300 **Additional allocation**: in Saudi Arabia, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Libya, Oman, Qatar, the Syrian Arab Republic and Sudan, the frequency band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-15)

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

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

5.312 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, and in Bulgaria the frequency bands 646-686 MHz, 726-753 MHz, 778-811 MHz and 822-852 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-19)

5.312A In Region 1, the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution 760 (Rev.WRC-19). See also Resolution 224 (Rev.WRC-19). (WRC-19)

5.316B In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790-862 MHz is subject to agreement obtained under No. 9.21 with respect to the aeronautical radionavigation service in countries mentioned in No. 5.312. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions 224 (Rev.WRC-19) and 749 (Rev.WRC-19) shall apply, as appropriate. (WRC-19)

5.317A The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions 224 (Rev.WRC-19), 760 (Rev.WRC-19) and 749 (Rev.WRC-19), where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.319 **Additional allocatio**n: in Belarus, the Russian Federation and Ukraine, the bands 806-840 MHz (Earth-to-space) and 856-890 MHz (space-to-Earth) are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of these bands by this service shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations and is subject to special agreements between the administrations concerned.

5.322 In Region 1, in the band 862-960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. 5.10 to 5.13) excluding Algeria, Burundi, Egypt, Spain, Lesotho, Libya, Morocco, Malawi, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. 9.21. (WRC-12)

5.323 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 862-960 MHz, in Bulgaria the frequency bands 862-880 MHz and 915-925 MHz, and in Romania the frequency bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. 9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-19)

5.327A The use of the frequency band 960-1 164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 417 (Rev.WRC-15). (WRC-15)

5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities. (WRC-2000)

5.328A Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution 609 (Rev.WRC-07) and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. 5.43A does not apply. The provisions of No. 21.18 shall apply. (WRC-07)

5.328AA The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to-space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service

shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution 425 (Rev.WRC-19) shall apply. (WRC-19)

5.328B The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. 9.12, 9.12A and 9.13. Resolution 610 (WRC-03) shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution 610 (WRC-03) shall only apply to transmitting space stations. In accordance with No. 5.329A, for systems and networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the provisions of Nos. 9.7, 9.12, 9.12A and 9.13 shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space). (WRC-07)

5.329 Use of the radionavigation-satellite service in the frequency band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. 5.331. Furthermore, the use of the radionavigation-satellite service in the frequency band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. 5.43 shall not apply in respect of the radiolocation service. Resolution 608 (Rev.WRC-19) shall apply. (WRC-19)

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table of Frequency Allocations. (WRC-07)

5.330 **Additional allocation**: in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Nepal, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

5.331 **Additional allocation**: in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the frequency band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the frequency band 1 240-1 300 MHz is also allocated to the radionavigation

service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-19)

5.332 In the band 1 215-1 260 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigation-satellite service and other services allocated on a primary basis. (WRC-2000)

5.335 In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service. (WRC-97)

5.335A In the band 1 260-1 300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service and other services allocated by footnotes on a primary basis. (WRC-2000)

5.337 The use of the bands 1 300-1 350 MHz, 2 700-2 900 MHz and 9 000-9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.

5.337A The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service. (WRC-2000)

5.338 In Kyrgyzstan, Slovakia and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-12)

5.338A In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 24.25-27.5 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.4 GHz, 52.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution 750 (Rev.WRC-19) applies. (WRC-19)

5.339 The bands 1 370-1 400 MHz, 2 640-2 655 MHz, 4 950-4 990 MHz and 15.20-15.35 GHz are also allocated to the space research (passive) and Earth exploration-satellite (passive) services on a secondary basis.

5.340 All emissions are prohibited in the following bands: 1400-1427 MHz 2690-2700 MHz, except those provided for by No. 5.422 10.68-10.7 GHz, except those provided for by No. 5.483 15.35-15.4 GHz, except those provided for by No. 5.511 23.6-24 GHz 31.3-31.5 GHz 31.5-31.8 GHz, in Region 2 48.94-49.04 GHz, from airborne stations 50.2-50.4 GHz (1) 52.6-54.25 GHz 86-92 GHz 100-102 GHz 109.5-111.8 GHz 114.25-116 GHz 148.5-151.5 GHz 164-167 GHz 182-185 GHz 190-191.8 GHz 200-209 GHz, 226-231.5 GHz 250-252 GHz. (WRC-03).The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (WRC-97)

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

5.341A In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15). This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. 5.342. (WRC-15)

5.342 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Uzbekistan, Kyrgyzstan and Ukraine, the frequency band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis, exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the frequency band 1 452-1 492 MHz is subject to agreement between the administrations concerned. (WRC-15)

5.345 Use of the frequency band 1 452-1 492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-19). (WRC-19)

5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, **Palestine**, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. 5.342. See also Resolution 761 (Rev.WRC-19). (WRC-19)

5.348 The use of the band 1 518-1 525 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. 5.43A does not apply. (WRC-03)

5.348A In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. 9.11A for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be –

150 dB(W/m2) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix 5. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. 5.43A does not apply. (WRC-03)

5.348B In the band 1 518-1 525 MHz, stations in the mobile-satellite service shall not claim protection from aeronautical mobile telemetry stations in the mobile service in the territory of the United States (see Nos. 5.343 and 5.344) and in the countries listed in No. 5.342. No. 5.43A does not apply. (WRC-03)

5.349 **Different category of servic**e: in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, Lebanon, North Macedonia, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the frequency band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33). (WRC-19)

5.350 **Additional allocatio**n: in Kyrgyzstan and Turkmenistan, the frequency band 1 525-1 530 MHz is also allocated to the aeronautical mobile service on a primary basis. (WRC-19)

5.351 The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5-1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.

5.351A For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). (WRC-07)

5.352A In the frequency band 1 525-1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Viet Nam and Yemen notified prior to 1 April 1998. (WRC-19)

5.353A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-2000) shall apply.)

5.354 The use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite services is subject to coordination under No. 9.11A.

5.355 **Additional allocation**: in Bahrain, Bangladesh, Congo (Rep. of the), Djibouti, Egypt, Eritrea, Iraq, Israel, Kuwait, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-12)

5.356 The use of the band 1 544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article 31).

5.357 Transmissions in the band 1 545-1 555 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.

5.357A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the frequency bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (Rev.WRC-12) shall apply.)

5.359 Additional allocation: in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Cameroon, the Russian Federation, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-19)

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

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

mobile-satellite service shall not claim protection from stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. 5.366 and stations in the fixed service operating in accordance with the provisions of No. 5.359. Administrations responsible for the coordination of mobile-satellite networks shall make all practicable efforts to ensure protection of stations operating in accordance with the provisions of No. 5.366.

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

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

5.367 **Additional allocation**: The frequency band 1 610-1 626.5 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-12)

5.368 The provisions of No. 4.10 do not apply with respect to the radiodetermination-satellite and mobile-satellite services in the frequency band 1 610-1 626.5 MHz. However, No. 4.10 applies in the frequency band 1 610-1 626.5 MHz with respect to the aeronautical radionavigation-satellite service when operating in accordance with No. 5.366, the aeronautical mobile satellite (R) service when operating in accordance with No. 5.367, and in the frequency band 1 621.35-1 626.5 MHz with respect to the maritime mobile-satellite service when used for GMDSS. (WRC-19)

5.369 **Different category of service**: in Angola, Australia, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Lebanon, Liberia, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, the Dem. Rep. of the Congo, Sudan, South Sudan, Togo and Zambia, the allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21 from countries not listed in this provision. (WRC-12

5.371 **Additional allocation**: in Region 1, the band 1 610-1 626.5 MHz (Earth-to-space) is also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. 9.21. (WRC-12)

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the frequency band 1 610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. 29.13 applies). The equivalent power flux-density (epfd) produced in the frequency band 1 610.6-1 613.8 MHz by all space stations of a non-geostationary-satellite system in the mobile-satellite service (space-to-Earth) operating in frequency band 1 613.8-1 626.5 MHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, using the methodology given in Recommendation ITU-R M.1583-1, and the radio astronomy antenna pattern described in Recommendation ITU-R RA.1631-0. (WRC-19)

5.373 Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose additional constraints on earth stations operating in the maritime mobile-satellite service or maritime earth stations of the radiodetermination-satellite

service operating in accordance with the Radio Regulations in the frequency band 1 610-1 621.35 MHz or on earth stations operating in the maritime mobile-satellite service operating in accordance with the Radio Regulations in the frequency band 1 626.5-1 660.5 MHz, unless otherwise agreed between the notifying administrations. (WRC-19)

5.373A Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose constraints on the assignments of earth stations of the mobile-satellite service (Earth-to-space) and the radiodetermination-satellite service (Earth-to-space) in the frequency band 1 621.35-1 626.5 MHz in networks for which complete coordination information has been received by the Radiocommunication Bureau before 28 October 2019. (WRC-19)

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

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

5.376 Transmissions in the band 1 646.5-1 656.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.

5.376A Mobile earth stations operating in the band 1 660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. (WRC-97)

5.379A Administrations are urged to give all practicable protection in the band 1 660.5-1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4-1 668.4 MHz as soon as practicable.

5.379B The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. In the band 1 668-1 668.4 MHz, Resolution 904 (WRC-07) shall apply. (WRC-07)

5.379C In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed –181 dB (W/m2) in 10 MHz and -194 dB (W/m2) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)

5.379D For sharing of the band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution 744 (Rev.WRC-07) shall apply. (WRC-07)

5.379E In the band 1 668.4-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4-1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are

encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)

5.380A In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified before 1 January 2004. Any new assignment to these earth stations in this band shall also be protected from harmful interference from stations in the mobile-satellite service. (WRC-07)

5.382 **Different category of service**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, North Macedonia, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33), and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. 5.33) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-19)

5.384A The frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, or portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.385 **Additional allocation**: the band 1 718.8-1 722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. (WRC-2000)

5.386 **Additional allocation:** the frequency band 1 750-1 850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2 (except in Mexico), in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. 9.21, having particular regard to troposcatter systems. (WRC 15)

5.387 **Additional allocation**: in Belarus, Georgia, Kazakhstan, Kyrgyzstan, Romania, Tajikistan and Turkmenistan, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-12)

5.388 The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution 212 (Rev.WRC-15) (see also Resolution 223 (Rev.WRC-15)). (WRC-15)

5.388A In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile

Telecommunications (IMT), in accordance with Resolution 221 (Rev.WRC-07). Their use by IMT applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-12)

5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the frequency bands referred to in No. 5.388A, shall not exceed a co-channel power flux-density of −127 dB(W/(m2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-19)

5.389A The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. 9.11A and to the provisions of Resolution 716 (Rev.WRC-2000). (WRC-07)

5.389B The use of the frequency band 1 980-1 990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela. (WRC-19)

5.389E The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite service in Region 2 shall not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3.

5.389F In Algeria, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services. (WRC-19)

5.391 In making assignments to the mobile service in the frequency bands 2 025-2 110 MHz and 2 200-2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154-0, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-15)

5.392 Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geostationary satellites, in the space research, space operations and Earth exploration-satellite services in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions of those services and in those bands between geostationary and non-geostationary satellites.

5.395 In France and Turkey, the use of the band 2 310-2 360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service. (WRC-03)

5.398 In respect of the radiodetermination-satellite service in the band 2 483.5-2 500 MHz, the provisions of No. 4.10 do not apply.

5.398A Different category of service: in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, the band 2 483.5-2 500 MHz is allocated on a primary basis to the radiolocation service. The radiolocation stations in these countries shall not cause harmful interference to, or claim protection from, stations of the fixed, mobile and mobile-satellite services operating in accordance with the Radio Regulations in the frequency band 2 483.5-2 500 MHz. (WRC-12)

5.399 Except for cases referred to in No. 5.401, stations of the radiodetermination-satellite service operating in the frequency band 2 483.5-2 500 MHz for which notification information is received by the Bureau after 17 February 2012, and the service area of which includes Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, shall not cause harmful interference to, and shall not claim protection from stations of the radiolocation service operating in these countries in accordance with No. 5.398A. (WRC-12)

5.401 In Angola, Australia, Bangladesh, China, Eritrea, Eswatini, Ethiopia, India, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Togo and Zambia, the frequency band 2 483.5-2 500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. 9.21 from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information. (WRC-19)

5.401 The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. 9.11A. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.

5.402 Subject to agreement obtained under No. 9.21, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. 9.11A apply. (WRC-07)

5.403 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. 9.21. No. 9.21 does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-12)

5.410 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. 9.21. No. 9.21 does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC 12)

5.412 **Alternative allocation**: in Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

5.413 In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690-2 700 MHz.

5.414 The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. 9.11A. (WRC-07)

5.416 The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. 9.21. The provisions of No. 9.19 shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)

5.418 **Additional allocation**: in India, the frequency band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-15). The provisions of No. 5.416 and Table 21-4 of Article 21, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution 539 (Rev.WRC-15). Geostationary broadcasting-satellite service (sound) systems for which complete Appendix 4 coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the frequency band 2 630-2 655 MHz, and for which complete Appendix 4 coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation: –130 dB(W/(m² · MHz)) for 0° ≤ θ ≤ 5° –130 + 0.4 (θ°– 5) dB(W/(m²⊙· MHz)) for 5° < θ ≤ 25° –122 dB(W/(m² · MHz)) for 25° < θ ≤ 90° where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of -122 dB (W/ (m2 · MHz)) shall be used as a threshold for coordination under No. 9.11 in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. 5.416 for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. (WRC-19)

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

5.418C Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. 9.13 with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. 5.418 and No. 22.2 does not apply. (WRC-03)

5.419 When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. 9.11A. (WRC-07)

5.420 The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. 9.21. The coordination under No. 9.11A applies. (WRC-07)

5.422 **Additional allocation**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

5.423 In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.

5.424 **Additional allocation:** in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

5.424A In the band 2 900-3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)

5.425 In the band 2 900-3 100 MHz, the use of the shipborne interrogator-transponder (SIT) system shall be confined to the sub-band 2 930 -2 950 MHz.

5.426 The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

5.427 In the bands 2 900-3 100 MHz and 9 300-9 500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. 4.9.

5.428 **Additional allocation**: in Kyrgyzstan and Turkmenistan, the frequency band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.429 **Additional allocation**: in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, New Zealand, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-19)

5.429A **Additional allocation**: in Angola, Benin, Botswana, Burkina Faso, Burundi, Djibouti, Eswatini, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-19)

5.429B In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Eswatini, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution 223 (Rev.WRC-19). The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.430 **Additional allocation**: in Kyrgyzstan and Turkmenistan, the frequency band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.430A The allocation of the frequency band 3 400-3 600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. 9.21. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. 9.17 and 9.18 shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB (W/ (m2 × 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any

country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC-15)

5.431 **Additional allocation**: in Germany, the frequency band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-19)

5.433A In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, New Zealand, Pakistan, the Philippines and the Dem. People's Rep. of Korea, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB (W/ (m2 × 4kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC-19)

5.436 Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 424 (WRC-15). (WRC-15)

5.437 Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4 200-4 400 MHz on a secondary basis. (WRC-15)

5.438 Use of the frequency band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. (WRC-15)

5.439 **Additional allocation**: in Iran (Islamic Republic of), the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis. (WRC 12)

5.440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 2 MHz of these frequencies, subject to agreement obtained under No. 9.21.

5.440A In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 400-4 940 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. 1.83). Such use shall be in accordance with Resolution 416 (WRC 07) and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this band by other mobile service applications or by other services to which this band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-07)

5.441 The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix 30B. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix 30B. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.441A In Brazil, Paraguay and Uruguay, the frequency band 4 800-4 900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service. Such use shall be in accordance with Resolution 223 (Rev.WRC 19). (WRC 19)

5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South

Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed −155 dB(W/(m2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This pfd criterion is subject to review at WRC-23. Resolution 223 (Rev.WRC-19) applies. This identification shall be effective after WRC-19. (WRC-19)

5.442 In the frequency bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), and in Australia, the frequency band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution 416 (WRC-07) and shall not cause harmful interference to the fixed service. (WRC-15)

5.443 **Different category of service**: in Argentina, Australia and Canada, the allocation of the bands 4 825 4 835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. 5.33).

5.443AA In the frequency bands 5 000-5 030 MHz and 5 091-5 150 MHz, the aeronautical mobile-satellite (R) service is subject to agreement obtained under No. 9.21. The use of these bands by the aeronautical mobile-satellite (R) service is limited to internationally standardised aeronautical systems. (WRC-12)

5.443B In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed −124.5 dB (W/m2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the frequency band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the frequency band 5 010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution 741 (Rev.WRC-15). (WRC-15)

5.443C The use of the frequency band 5 030-5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030-5 091 MHz shall be limited to protect RNSS system downlinks in the adjacent 5 010-5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of −75 dBW/MHz in the frequency band 5 010-5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)

5.443D In the frequency band 5 030-5 091 MHz, the aeronautical mobile-satellite (R) service is subject to coordination under No. 9.11A. The use of this frequency band by the aeronautical mobile-satellite (R) service is limited to internationally standardised aeronautical systems. (WRC-12)

5.444 The frequency band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the frequency band 5 030-5 091 MHz, the requirements of this system shall have priority over other uses of this frequency band. For the use of the frequency band 5 091-5 150 MHz, No. 5.444A and Resolution 114 (Rev.WRC-15) apply. (WRC-15)

5.444A The use of the allocation to the fixed-satellite service (Earth-to-space) in the frequency band 5 091-5 150 MHz is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. 9.11A. The use of the frequency band 5 091-5 150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution 114 (Rev.WRC-15). Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service. (WRC-15)

5.444B The use of the band 5091-5150 MHz by the aeronautical mobile service is limited to: - systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution 748 (Rev. WRC-15); - aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution 418 (Rev. WRC-15). (WRC-19)

5.446 **Additional allocation**: in the countries listed in No. 5.369, the frequency band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. 9.21. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. 5.369 and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed −159 dB(W/m2) in any 4 kHz band for all angles of arrival. (WRC-15)

5.446A The use of the frequency bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution 229 (Rev.WRC-19). (WRC-19)

5.446B In the band 5 150-5 250 MHz, stations in the mobile service shall not claim protection from earth stations in the fixed-satellite service. No. 5.43A does not apply to the mobile service with respect to fixed-satellite service earth stations. (WRC-03)

5.446C **Additional allocation**: in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab

Republic, Sudan, South Sudan and Tunisia), the frequency band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC-19). These stations shall not claim protection from other stations operating in accordance with Article 5. No. 5.43A does not apply. (WRC-19)

5.446D **Additional allocation:** in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC 19). (WRC 19)

5.447 **Additional allocation**: in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the frequency band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. 9.21. In this case, the provisions of Resolution 229 (Rev.WRC-19) do not apply. (WRC-19)

5.447A The allocation to the fixed-satellite service (Earth-to-space) in the band 5 150-5 250 MHz is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. 9.11A.

5.447B **Additional allocation**: the band 5 150-5 216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. 9.11A. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150-5 216 MHz shall in no case exceed –164 dB(W/m2) in any 4 kHz band for all angles of arrival.

5.447C Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 MHz operated under Nos. 5.447A and 5.447B shall coordinate on an equal basis in accordance with No. 9.11A with administrations responsible for non-geostationary-satellite networks operated under No. 5.446 and brought into use prior to 17 November 1995. Satellite networks operated under No. 5.446 brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under Nos. 5.447A and 5.447B.

5.447D The allocation of the band 5 250-5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)

5.447E **Additional allocation:** The frequency band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this frequency band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU R F.1613 0. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. 5.43A do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless

access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC 15)

5.447F In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). The radiolocation service, the Earth exploration-satellite service (active) and the space research service (active) shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution 229 (Rev.WRC-19). (WRC-19)

5.448 **Additional allocation**: in Kyrgyzstan, Romania and Turkmenistan, the frequency band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.448A The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250-5 350 MHz shall not claim protection from the radiolocation service. No. 5.43A does not apply. (WRC-03)

5.448B The Earth exploration-satellite service (active) operating in the band 5 350-5 570 MHz and space research service (active) operating in the band 5 460-5 570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5 350-5 460 MHz, the radionavigation service in the band 5 460-5 470 MHz and the maritime radionavigation service in the band 5 470-5 570 MHz. (WRC-03)

5.448C The space research service (active) operating in the band 5 350-5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. (WRC-03)

5.448D In the frequency band 5 350-5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. 5.449. (WRC-03)

5.449 The use of the band 5 350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

5.450 **Additional allocation**: in Austria, Azerbaijan, Iran (Islamic Republic of), Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

5.450A In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. The radiodetermination services shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution 229 (Rev.WRC-19). (WRC-19)

5.450B In the frequency band 5 470-5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600-5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)

5.451 **Additional allocation**: in the United Kingdom, the band 5 470-5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. 21.2, 21.3, 21.4 and 21.5 shall apply in the band 5 725-5 850 MHz.

5.452 Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.

5.453 **Additional allocatio**n: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the frequency band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution 229 (Rev.WRC-19) do not apply. In addition, in Afghanistan, Angola, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Dem. Rep. of the Congo, Fiji, Ghana, Kiribati, Lesotho, Malawi, Maldives, Mauritius, Micronesia, Mongolia, Mozambique, Myanmar, Namibia, Nauru, New Zealand, Papua New Guinea, Rwanda, Solomon Islands, South Sudan, South Africa, Tonga, Vanuatu, Zambia and Zimbabwe, the frequency band 5 725-5 850 MHz is allocated to the fixed service on a primary basis, and stations operating in the fixed service shall not cause harmful interference to and shall not claim protection from other primary services in the frequency band. (WRC-19)

5.454 **Different category of service**: in Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. 5.33). (WRC-12)

5.455 **Additional allocation**: in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.457 In Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria, the allocation to the fixed service in the bands 6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to-HAPS direction) may also be used by gateway links for high-altitude platform stations (HAPS) within the territory of these countries. Such use is limited to operation in HAPS gateway links and shall not cause harmful interference to, and shall not claim protection from, existing services, and shall be in compliance with Resolution 150 (WRC-12). Existing services shall not be constrained in future development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. (WRC-12)

5.457A In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution 902 (WRC-03). In the frequency band 5 925-6 425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of

1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution 902 (WRC-03) shall apply. (WRC-15)

5.457B In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution 902 (WRC-03) in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution 902 (WRC-03). (WRC-15)

5.457C In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), the frequency band 5 925-6 700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. 1.83). Such use shall be in accordance with Resolution 416 (WRC 07) and shall not cause harmful interference to, or claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this frequency band by other mobile service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC 15)

5.458 In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 075 MHz and 7 075-7 250 MHz.

5.458A In making assignments in the band 6 700-7 075 MHz to space stations of the fixed-satellite service, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service in the band 6 650-6 675.2 MHz from harmful interference from unwanted emissions.

5.458B The space-to-Earth allocation to the fixed-satellite service in the band 6 700-7 075 MHz is limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. 9.11A. The use of the band 6 700-7 075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. 22.2.

5.459 **Additional allocation**: in the Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21. In the frequency band 7 190-7 235 MHz, with respect to the Earth exploration-satellite service (Earth-to-space), No. 9.21 does not apply. (WRC-15)

5.460 No emissions from space research service (Earth-to-space) systems intended for deep space shall be effected in the frequency band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. 5.43A does not apply. (WRC-15)

5.460A The use of the frequency band 7 190-7 250 MHz (Earth-to-space) by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of spacecraft. Space stations operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 250 MHz shall not claim protection from existing and future stations in the fixed and mobile services, and No. 5.43A does not apply. No. 9.17 applies. Additionally, to ensure protection of the existing and future deployment of fixed and mobile services, the location of earth stations supporting spacecraft in the Earth exploration-satellite service in non-geostationary orbits or geostationary orbit shall maintain a separation distance of at least 10 km and 50 km, respectively, from the respective border(s) of neighbouring countries, unless a shorter distance is otherwise agreed between the corresponding administrations. (WRC-15)

5.460B Space stations on the geostationary orbit operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the space research service, and No. 5.43A does not apply. (WRC-15)

5.461 **Additional allocation**: the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21.

5.461A The use of the band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary-satellite systems. Non-geostationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on a primary basis until the end of their lifetime. (WRC-97)

5.461AA The use of the frequency band 7 375-7 750 MHz by the maritime mobile-satellite service is limited to geostationary-satellite networks. (WRC-15)

5.461AB In the frequency band 7 375-7 750 MHz, earth stations in the maritime mobile-satellite service shall not claim protection from, nor constrain the use and development of, stations in the fixed and mobile, except aeronautical mobile, services. No. 5.43A does not apply. (WRC-15)

5.461B The use of the band 7 750-7 900 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems. (WRC-12)

5.462A In Regions 1 and 3 (except for Japan), in the band 8025-8400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration: - 135 dB(W/m²) in a 1 MHz band for $0° \le \theta < 5°$ - $135 + 0.5 (\theta - 5)$ dB(W/m²) in a 1 MHz band for $5° \le \theta < 25°$ - 125 dB(W/m²) in a 1 MHz band for $25° \le \theta < 90°$ (WRC-12)

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

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

5.466 **Different category of service**: in Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. 5.32). (WRC 12)

5.468 **Additional allocation**: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Chad, Togo, Tunisia and Yemen, the frequency band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-19)

5.469 **Additional allocation**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-12)

5.469A In the band 8 550-8 650 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service. (WRC-97)

5.470 The use of the band 8 750-8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.

5.471 **Additional allocation**: in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the frequency bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-15)

5.472 In the bands 8 850-9 000 MHz and 9 200-9 225 MHz, the maritime radionavigation service is limited to shore-based radars.

5.473 **Additional allocation**: in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-19)

5.473A In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. 5.337 operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. 5.471. (WRC-07)

5.474 In the band 9 200-9 500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article 31).

5.474A The use of the frequency bands 9 200-9 300 MHz and 9 900-10 400 MHz by the Earth exploration-satellite service (active) is limited to systems requiring necessary bandwidth greater than 600 MHz that cannot be fully accommodated within the frequency band 9 300-9 900 MHz. Such use is subject to agreement to be obtained under No. 9.21 from

Algeria, Saudi Arabia, Bahrain, Egypt, Indonesia, Iran (Islamic Republic of), Lebanon and Tunisia. An administration that has not replied under No. 9.52 is considered as not having agreed to the coordination request. In this case, the notifying administration of the satellite system operating in the Earth exploration-satellite service (active) may request the assistance of the Bureau under Sub-Section IID of Article 9. (WRC-15)

5.474B Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2066-0. (WRC-15)

5.474C Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2065-0. (WRC-15)

5.474D Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime radionavigation and radiolocation services in the frequency band 9 200-9 300 MHz, the radionavigation and radiolocation services in the frequency band 9 900-10 000 MHz and the radiolocation service in the frequency band 10.0-10.4 GHz. (WRC-15)

5.475 The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. (WRC-07)

5.475A The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)

5.475B In the band 9 300-9 500 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, radars operating in the radionavigation service in conformity with the Radio Regulations. Ground-based radars used for meteorological purposes have priority over other radiolocation uses. (WRC-07)

5.476A In the band 9 300-9 800 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and radiolocation services. (WRC-07)

5.477 **Different category of service**: in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. 5.33). (WRC-15)

5.478 **Additional allocation**: in Azerbaijan, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the frequency band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.478A The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band. (WRC-07)

5.478B In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis. (WRC-07)

5.479 The band 9 975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

5.481 **Additional allocation**: in Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica, the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-19

5.482 In the band 10.6-10.68 GHz, the power delivered to the antenna of stations of the fixed and mobile, except aeronautical mobile, services shall not exceed −3 dBW. This limit may be exceeded, subject to agreement obtained under No. 9.21. However, in Algeria, Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Egypt, United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Pakistan, Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, services is not applicable. (WRC-07)

5.482A For sharing of the band 10.6-10.68 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile, except aeronautical mobile, services, Resolution 751 (WRC-07) applies. (WRC-07)

5.483 **Additional allocation**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China, Colombia, Korea (Rep. of), Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the frequency band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-19)

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

5.484A The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. 9.12 for coordination

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

5.484B Resolution 155 (WRC-15) shall apply. (WRC-15)

5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix 30. (WRC-03)

5.487A **Additional allocation**: in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)

5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. 9.14 for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix 30. (WRC-03)

5.492 Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix 30 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. (WRC-2000)

5.494 **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

5.495 **Additional allocation**: in Greece, Monaco, Montenegro, Uganda and Tunisia, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-19)

5.496 **Additional allocation**: in Austria, Azerbaijan, Kyrgyzstan and Turkmenistan, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Table 21-4 of Article 21, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (WRC-2000)

5.497 The use of the band 13.25-13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.

5.498A The Earth exploration-satellite (active) and space research (active) services operating in the band 13.25-13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)

5.499 **Additional allocation:** in Bangladesh and India, the band 13.25-14 GHz is also allocated to the fixed service on a primary basis. In Pakistan, the band 13.25-13.75 GHz is allocated to the fixed service on a primary basis. (WRC 12)

5.499A The use of the frequency band 13.4-13.65 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary-satellite systems and is subject to agreement obtained under No. 9.21 with respect to satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015. (WRC-15)

5.499B Administrations shall not preclude the deployment and operation of transmitting earth stations in the standard frequency and time signal-satellite service (Earth-to-space) allocated on a secondary basis in the frequency band 13.4-13.65 GHz due to the primary allocation to FSS (space-to-Earth). (WRC-15)

5.499C The allocation of the frequency band 13.4-13.65 GHz to the space research service on a primary basis is limited to: - satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary- satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015, - active

spaceborne sensors, - satellite systems operating in the space research service (space-to-Earth) to relay data from space stations in the geostationary-satellite orbit to associated earth stations. Other uses of the band by the space research service are on a secondary basis. (WRC-15)

5.499D In the frequency band 13.4-13.65 GHz, satellite systems in the space research service (space-to-Earth) and/or the space research service (space-to-space) shall not cause harmful interference to, nor claim protection from, stations in the fixed, mobile, radiolocation and Earth exploration-satellite (active) services. (WRC-15)

5.499E In the frequency band 13.4-13.65 GHz, geostationary-satellite networks in the fixed-satellite service (space-to-Earth) shall not claim protection from space stations in the Earth exploration-satellite service (active) operating in accordance with these Regulations, and No. 5.43A does not apply. The provisions of No. 22.2 do not apply to the Earth exploration-satellite service (active) with respect to the fixed-satellite service (space-to-Earth) in this frequency band. (WRC-15)

5.500 **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.501 **Additional allocation**: in Azerbaijan, Hungary, Japan, Kyrgyzstan, Romania and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-12)

5.501A The allocation of the frequency band 13.65-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)

5.501B In the band 13.4-13.75 GHz, the Earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service. (WRC-97)

5.502 In the band 13.75-14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed- satellite service in this band with an antenna size smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed: - 115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal state; - 115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained. For earth stations within the fixed-satellite service having an antenna diameter greater than

or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)

5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band: - in the band 13.77-13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary- satellite orbit shall not exceed: i) 4.7D + 28 dB(W/40 kHz), where D is the fixed- satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 1.2 m and less than 4.5 m; ii) 49.2 + 20 log(D/4.5) dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m; iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m; iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed- satellite service earth station having an antenna diameter of 4.5 m or greater; - the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz. Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)

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

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

5.504B Aircraft earth stations operating in the aeronautical mobile-satellite service in the frequency band 14-14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643-0, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz frequency band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-15)

5.504C In the frequency band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Nigeria, Oman, the Syrian Arab Republic and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. 5.29. (WRC-15)

5.505 **Additional allocatio**n: in Algeria, Saudi Arabia, Bahrain, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Viet Nam and Yemen, the frequency band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

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

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

5.506B Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus and Malta, within the minimum distance given in Resolution 902 (WRC-03) from these countries. (WRC-15)

5.508 **Additional allocation**: in Germany, France, Italy, Libya, North Macedonia and the United Kingdom, the frequency band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.508A In the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. 5.29. (WRC-15)

5.509A In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. 5.29. (WRC-15)

5.509B The use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.5-14.8 GHz in countries listed in Resolution 164 (WRC-15) by the fixed-

satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service is limited to geostationary-satellites. (WRC-15)

5.509C For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.5-14.8 GHz in countries listed in Resolution 164 (WRC-15) by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service, the fixed-satellite service earth stations shall have a minimum antenna diameter of 6 m and a maximum power spectral density of −44.5 dBW/Hz at the input of the antenna. The earth stations shall be notified at known locations on land. (WRC-15)

5.509D For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.5-14.8 GHz in countries listed in Resolution 164 (WRC-15) by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service, the fixed-satellite service earth stations shall have a minimum antenna diameter of 6 m and a maximum power spectral density of −44.5 dBW/Hz at the input of the antenna. The earth stations shall be notified at known locations on land. (WRC-15)

5.509E In the frequency bands 14.50-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.50-14.8 GHz in countries listed in Resolution 164 (WRC-15), the location of earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall maintain a separation distance of at least 500 km from the border(s) of other countries unless shorter distances are explicitly agreed by those administrations. No. 9.17 does not apply. When applying this provision, administrations should consider the relevant parts of these Regulations and the latest relevant ITU-R Recommendations. (WRC-15)

5.509F In the frequency bands 14.50-14.75 GHz in countries listed in Resolution 163 (WRC-15) and 14.50-14.8 GHz in countries listed in Resolution 164 (WRC-15), earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall not constrain the future deployment of the fixed and mobile services. (WRC-15)

5.509G The frequency band 14.5-14.8 GHz is also allocated to the space research service on a primary basis. However, such use is limited to the satellite systems operating in the space research service (Earth-to-space) to relay data to space stations in the geostationary-satellite orbit from associated earth stations. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services and in the fixed-satellite service limited to feeder links for the broadcasting-satellite service and associated space operations functions using the guardbands under Appendix 30A and feeder links for the broadcasting-satellite service in Region 2. Other uses of this frequency band by the space research service are on a secondary basis. (WRC-15)

5.510 Except for use in accordance with Resolution 163 (WRC-15) and Resolution 164 (WRC-15), the use of the frequency band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. Uses other than feeder links for the broadcasting-satellite service are not authorized in Regions 1 and 2 in the frequency band 14.75-14.8 GHz. (WRC-15)

5.511 **Additional allocation**: in Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Oman, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

5.511A Use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. 9.11A. (WRC-15)

5.511C Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340-0. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. 4.10 applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation ITU-R S.1340-0. (WRC-15)

5.511E In the frequency band 15.4-15.7 GHz, stations operating in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the aeronautical radionavigation service. (WRC-12)

5.511F In order to protect the radio astronomy service in the frequency band 15.35-15.4 GHz, radiolocation stations operating in the frequency band 15.4-15.7 GHz shall not exceed the power flux-density level of −156 dB(W/m2) in a 50 MHz bandwidth in the frequency band 15.35-15.4 GHz, at any radio astronomy observatory site for more than 2 per cent of the time. (WRC-12)

5.512 **Additional allocatio**n: in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Montenegro, Nepal, Nicaragua, Niger, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.513 **Additional allocation**: in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. 5.512.

5.513A Spaceborne active sensors operating in the band 17.2-17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis. (WRC-97)

5.514 **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Sudan and South Sudan, the frequency band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 21.3 and 21.5 shall apply. (WRC-15)

5.515 In the band 17.3-17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of § 1 of Annex 4 of Appendix 30A.

5.516 service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article 11. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix 30A, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

5.516B The following bands are identified for use by high-density applications in the fixed-satellite service (HDFSS): 17.3-17.7 GHz (space-to-Earth) in Region 1 18.3-19.3 GHz (space-to-Earth) in Region 2 19.7-20.2 GHz (space-to-Earth) in all Regions 39.5-40 GHz (space-to-Earth) in Region 1 40-40.5 GHz (space-to-Earth) in all Regions 40.5-42 GHz (space-to-Earth) in Region 2 47.5-47.9 GHz (space-to-Earth) in Region 1 48.2-48.54 GHz (space-to-Earth) in Region 1 49.44-50.2 GHz (space-to-Earth) in Region 1 and 27.5-27.82 GHz (Earth-to-space) in Region 1 28.35-28.45 GHz (Earth-to-space) in Region 2 28.45-28.94 GHz (Earth-to-space) in all Regions 28.94-29.1 GHz (Earth-to-space) in Region 2 and 3 29.25-29.46 GHz (Earth-to- space) in Region 2 29.46-30 GHz (Earth-to-space) in all Regions 48.2-50.2 GHz (Earth-to-space) in Region 2. This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution 143 (WRC-03). (WRC-03).

5.517A The operation of earth stations in motion communicating with geostationary fixed-satellite service space stations within the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) shall be subject to the application of Resolution 169 (WRC-19). (WRC-19)

5.519 **Additional allocation**: the bands 18-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)

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

5.521 **Alternative allocation**: in the United Arab Emirates and Greece, the frequency band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. 5.33). The provisions of No. 5.519 also apply. (WRC-15)

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

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

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

5.523A The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. 9.11A and No. 22.2 does not apply. Administrations having geostationary-satellite networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. 9.11A with non-geostationary-satellite networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-geostationary-satellite networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix 4 notification information is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

5.523B The use of the band 19.3-19.6 GHz (Earth-to-space) by the fixed-satellite service is limited to feeder links for non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. 9.11A, and No. 22.2 does not apply.

5.523C No. 22.2 shall continue to apply in the bands 19.3-19.6 GHz and 29.1-29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

5.523D The use of the band 19.3-19.7 GHz (space-to-Earth) by geostationary fixed-satellite service systems and by feeder links for non-geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. 9.11A, but not subject to the provisions of No. 22.2. The use of this band for other non-geostationary

fixed-satellite service systems, or for the cases indicated in Nos. 5.523C and 5.523E, is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)

5.523E No. 22.2 shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)

5.524 **Additional allocation**: in Afghanistan, Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Tunisia, the frequency band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the frequency band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the frequency band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter frequency band. (WRC-15)

5.525 In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz.

5.526 In the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2, and in the bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point-to-point and point-to-multipoint communications.

5.527 In the bands 19.7-20.2 GHz and 29.5-30 GHz, the provisions of No. 4.10 do not apply with respect to the mobile-satellite service.

5.527A The operation of earth stations in motion communicating with the FSS is subject to Resolution 156 (WRC-15). (WRC-15)

5.528 The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1 GHz in Region 2 and in the band 20.1-20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. 5.524.

5.528A The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1 GHz in Region 2 and in the band 20.1-20.2 GHz shall take all practicable steps to ensure

the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. 5.524.

5.530A Unless otherwise agreed between the administrations concerned, any station in the fixed or mobile services of an administration shall not produce a power flux-density in excess of −120.4 dB(W/(m2 · MHz)) at 3 m above the ground of any point of the territory of any other administration in Regions 1 and 3 for more than 20% of the time. In conducting the calculations, administrations should use the most recent version of Recommendation ITU-R P.452 (see also the most recent version of Recommendation ITU-R BO.1898). (WRC-15)

5.530B In the band 21.4-22 GHz, in order to facilitate the development of the broadcasting-satellite service, administrations in Regions 1 and 3 are encouraged not to deploy stations in the mobile service and are encouraged to limit the deployment of stations in the fixed service to point-to-point links. (WRC-12)

5.532 The use of the band 22.21-22.5 GHz by the Earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.

5.532A The location of earth stations in the space research service shall maintain a separation distance of at least 54 km from the respective border(s) of neighbouring countries to protect the existing and future deployment of fixed and mobile services unless a shorter distance is otherwise agreed between the corresponding administrations. Nos. 9.17 and 9.18 do not apply. (WRC-12)

5.532AA The allocation to the fixed service in the frequency band 24.25-25.25 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction and shall be in accordance with the provisions of Resolution 166 (WRC-19). (WRC-19)

5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 242 (WRC-19) applies. (WRC-19)

5.532B Use of the band 24.65-25.25 GHz in Region 1 and the band 24.65-24.75 GHz in Region 3 by the fixed-satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5 m. (WRC-12)

5.533 The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.

5.534A The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution 166 (WRC 19). Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.25-27.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore,

the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. (WRC 19)

5.535 In the band 24.75-25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.

5.535A The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. 9.11A, but not subject to the provisions of No. 22.2, except as indicated in Nos. 5.523C and 5.523E where such use is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)

5.536 Use of the 25.25-27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution 242 (WRC-19) applies. (WRC-19)

5.536B In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Sudan, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution 242 (WRC-19) applies. (WRC-19)

5.536C In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-12)

5.537 Space services using non-geostationary satellites operating in the inter-satellite service in the band 27-27.5 GHz are exempt from the provisions of No. 22.2.

5.537A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the frequency band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution 145 (Rev.WRC-19). (WRC-19)

5.538 **Additional allocation**: the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. (WRC-07)

5.539 The band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

5.540 **Additional allocation**: the band 27.501-29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.

5.541 In the band 28.5-30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.

5.541A Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix 4 coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix 4 information for coordination before this date are encouraged to utilize these techniques to the extent practicable. (WRC-2000)

5.542 **Additional allocation**: in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC-12)

5.543 The band 29.95-30 GHz may be used for space-to-space links in the Earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.

5.543B The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution 167 (WRC-19). (WRC-19)

5.544 In the band 31-31.3 GHz the power flux-density limits specified in Article 21, Table 21-4 shall apply to the space research service.

5.545 **Different category of service**: in Armenia, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. 5.33). (WRC-12)

5.546 **Different category of service**: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the frequency band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33). (WRC-19)

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution 75 (WRC-2000)). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. 5.516B), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

5.547A Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems. (WRC-2000)

5.547B **Alternative allocation**: in the United States, the band 31.8-32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

5.547C **Alternative allocation**: in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-03)

5.547D **Alternative allocation**: in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. (WRC-97)

5.547E **Alternative allocation**: in the United States, the band 33-33.4 GHz is allocated to the radionavigation service on a primary basis. (WRC-97)

5.548 In designing systems for the inter-satellite service in the band 32.3-33 GHz, for the radionavigation service in the band 32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation 707). (WRC-03)

5.549 **Additional allocation**: in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

5.549A In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed -73.3 dB(W/m2) in this band. (WRC-03)

5.550 **Different category of service**: in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. 5.33). (WRC-12)

5.550A For sharing of the band 36-37 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile services, Resolution 752 (WRC-07) shall apply. (WRC-07)

5.550B The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. 5.516B), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution 243 (WRC-19) applies. (WRC-19)

5.550C The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to the application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service but not with non-geostationary-satellite systems in other services. Resolution 770 (WRC-19) shall also apply, and No. 22.2 shall continue to apply. (WRC-19)

5.550D The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. 5.43A does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is

allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution 168 (WRC-19). (WRC-19)

5.550E The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile-satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to-Earth) is subject to the application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite and mobile-satellite services but not with non-geostationary-satellite systems in other services. No. 22.2 shall continue to apply for non-geostationary-satellite-systems. (WRC-19)

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

5.551H The equivalent power flux-density (epfd) produced in the frequency band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed- satellite service, or in the broadcasting-satellite service operating in the frequency band 42-42.5 GHz, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time: -230 dB(W/m²) in 1 GHz and -246 dB(W/m²) in any 500 kHz of the frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a single-dish telescope; and -209 dB(W/ m²) in any 500 kHz of the frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a very long baseline interferometry station. These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631-0 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θmin of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information). These values shall apply at any radio astronomy station that either: - was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or - was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply. Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution 743 (WRC-03) shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-15)

5.551I The power flux-density in the band 42.5-43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting- satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station: -137 dB(W/ m²) in 1 GHz and -153 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and -116 dB(W/ m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station. These values shall apply at the site of any radio astronomy station that either: - was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or - was notified before the date of receipt of the complete

Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply. Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution 743 (WRC-03) shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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

5.552A The allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by HAPS shall be in accordance with the provisions of Resolution 122 (Rev.WRC-19). (WRC-19)

5.553 In the bands 43.5-47 GHz and 66-71 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. 5.43). (WRC-2000)

5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. 5.553. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 244 (WRC-19) applies. (WRC-19)

5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone,

Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution 243 (WRC-19) applies. (WRC-19)

5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, 191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service. (WRC-2000)

5.554A The use of the bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary satellites. (WRC-03)

5.555 **Additional allocation**: the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. (WRC-2000)

5.555B The power flux-density in the band 48.94-49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed –151.8 dB(W/m2) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

5.555C The use of the frequency band 51.4-52.4 GHz by the fixed-satellite service (Earth-to-space) is limited to geostationary-satellite networks. The earth stations shall be limited to gateway earth stations with a minimum antenna diameter of 2.4 metres. (WRC-19)

5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz and 64-65 GHz, radio astronomy observations may be carried out under national arrangements. (WRC-2000)

5.556A Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –147 dB(W/(m2 · 100 MHz)) for all angles of arrival. (WRC-97)

5.557 **Additional allocation**: in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (WRC-97)

5.557A In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to –26 dB(W/MHz). (WRC-2000)

5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, 122.25-123 GHz, 130-134 GHz, 167-174.8 GHz and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. 5.43). (WRC-2000)

5.558A Use of the band 56.9-57 GHz by inter-satellite systems is limited to links between satellites in geostationary-satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of

modulation, shall not exceed –147 dB(W/(m2 # 100 MHz)) for all angles of arrival. (WRC-97)

5.559 In the band 59-64 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. 5.43). (WRC-2000)

5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution 241 (WRC-19) applies. (WRC-19)

5.559B The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. 4.10 do not apply. (WRC-15)

5.560 In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

5.561 In the band 74-76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service. (WRC-2000)

5.561A The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis. (WRC-2000)

5.561B In Japan, use of the band 84-86 GHz, by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit. (WRC 2000)

5.562 The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars. (WRC-97)

5.562A In the bands 94-94.1 GHz and 130-134 GHz, transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. (WRC-2000)

5.562B In the frequency bands 105-109.5 GHz, 111.8-114.25 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-19)

5.562C Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth’s surface and in the vicinity of all

geostationary orbital positions occupied by passive sensors, shall not exceed – 148 dB(W/(m2 × MHz)) for all angles of arrival. (WRC-2000)

5.562D **Additional allocation**: In Korea (Rep. of), the frequency bands 128-130 GHz, 171-171.6 GHz, 172.2 172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis. Radio astronomy stations in Korea (Rep. of) operating in the frequency bands referred to in this footnote shall not claim protection from, or constrain the use and development of, services in other countries operating in accordance with the Radio Regulations. (WRC 15)

5.562E The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz. (WRC-2000)

5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed -144 dB(W/(m2 × MHz)) for all angles of arrival. (WRC-2000)

5.563A In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. (WRC-2000)

5.563B The band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only. (WRC-2000)

5.564A For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz: The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications. The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution 731 (Rev.WRC-19).In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis in accordance with Resolution 731 (Rev.WRC-19).The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-19)

5.565 The following frequency bands in the range 275-1000 GHz are identified for use by administrations for passive services applications: - radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz; - Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-

776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz. The use of the range 275-1000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1000 GHz frequency range. All frequencies in the range 1000-3000 GHz may be used by both active and passive services. (WRC-12).