



## REPUBLIC OF VANUATU

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National Table of Frequency Allocations (NTFA)

2025

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## Chapter I. Preliminary

### §1. Authority

These rules are promulgated pursuant to the powers granted to the **Telecommunications Radiocommunications and Broadcasting Regulator (TRBR)**.

### §2. Title

This document shall be cited as the “National Table of Frequency Allocations (NTFA), 2025.”

### §3. Objectives

The objectives of these rules include to:

- (a) fulfill the functions and duties of TRBR regarding spectrum planning and allocation in accordance with the Telecommunications Radiocommunications and Broadcasting Regulation Act No 30 of 2009 as amended by ammentment 22 of 2018;
- (b) promote the efficient and interference-free use of the radio spectrum; and
- (c) promote competition, economies of scale, and efficient investment in telecommunications technologies and services in the Republic of Vanuatu.

### §4. References to International Telecommunications Union (ITU) documents

- (a) This document is based on the ITU Radio Regulations 2024 edition and the Final Acts of the WRC-23;
- (b) All the Annexes, Appendixes, Resolutions, and Recommendations, of the ITU Radio Regulations referenced in the footnotes (both national and international) shall be part of this National Table of Frequency Allocations and apply in the Republic of Vanuatu.

### §5. Intentional, unintentional, or incidental emissions

The frequency bands and technical parameters under which an intentional, unintentional, or incidental emissions may be treted are set out in the ITU Radio Regulations and this National Table of Frequency Allocations of the Republic of Vanuatu.

## Chapter II. Definitions

### §7. Frequency and wavelength bands

- (a) 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 kilohertz (kHz), up to and including 3 000 kHz;
  - in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;
  - in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.
- (b) However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made.

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

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

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

## §8. General terms

The following definitions shall apply to the use and interpretation of the National Table of Frequency Allocations.

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

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

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

**radio waves or hertzian waves:** Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.

**radiocommunication:** *Telecommunication* by means of *radio waves*.

**terrestrial radiocommunication:** Any *radiocommunication* other than *space radiocommunication* or *radio astronomy*.

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

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

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

**radiolocation:** *Radiodetermination* used for purposes other than those of *radionavigation*.

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

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

**Coordinated Universal Time (UTC):** Time scale, based on the second (SI), as 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.

*Examples of equipment used in ISM applications for industrial, scientific, medical and domestic purposes:*

*plastic welders  
chemical analysis equipment  
medical diathermy equipment  
microwave ovens.*

**Short Range Devices (SRD):** According to the report ITU-R SM.2139, the term short-range radio device is intended to cover radio transmitters which provide either unidirectional or bidirectional communication and which have low capability of causing interference to other radio equipment.<sup>1</sup> The SRD may refer to many different types of wireless equipment, including various forms of:

- Access control (including door and gate openers)
- Alarms and movement detectors
- Closed-circuit television (CCTV)
- Cordless audio devices, including wireless microphones
- Industrial control
- Local Area Networks
- Medical implants
- Metering devices
- Remote control
- Radio frequency identification (RFID)
- Road Transport Telematics
- Telemetry

Such devices are permitted to operate on a non-interference and non-protected basis.<sup>2</sup>

### **§9. Allocation, allotment, and assignment**

The following definitions apply to the use and interpretation of this regulation.

**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.

<sup>1</sup> See Report ITU-R SM. 2139, <https://www.itu.int/pub/R-REP-SM.2153-9-2022>, Recommendation ITU-R SM. 2130, [https://www.itu.int/dms\\_pubrec/itu-r/rec/sm/R-REC-SM.2103-0-201709-!!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/sm/R-REC-SM.2103-0-201709-!!!PDF-E.pdf), and

<sup>2</sup> See, <https://www.etsi.org/committee/1398-erm>

**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.

## §10. Radio services

The following definitions of radiocommunications services are reproduced from the ITU Radio Regulations (2024 edition) and shall apply to the National Table of Frequency Allocations.

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

In these rules, 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 (OR)\*\* service:** An *aeronautical mobile service* intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.

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

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

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

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

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\* (R): route.

\*\* (OR): off-route.

**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*.

## §11. 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 rules, 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 a 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):** 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.

**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.

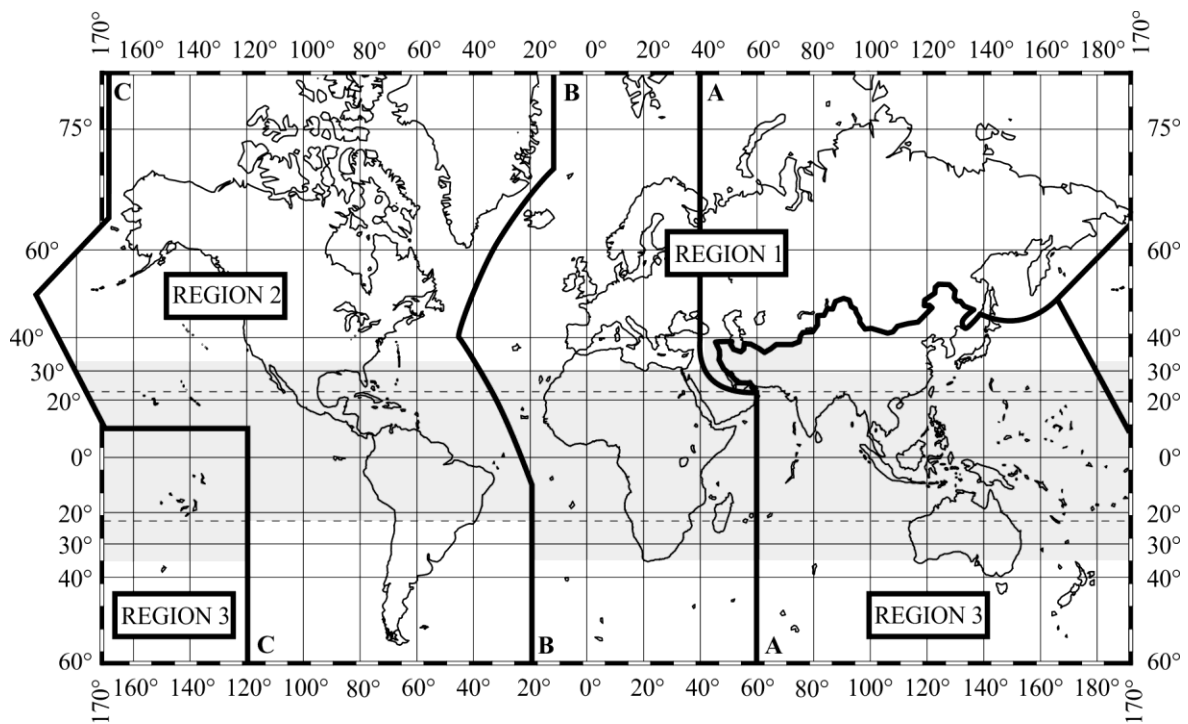
**feeder link:** A radio link from an *earth station* at a given location to a *space station*, or vice versa, conveying information for a *space radiocommunication service* other than for the *fixed-satellite service*. The given location may be at a specified fixed point, or at any fixed point within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

**§12. Additional definitions applicable to the National Table of Frequency Allocations (NTFA)**

Definitions in Sections V (operational terms), Section VI (Characteristics of emissions and radio equipment), Section VII (frequency sharing), and Section VIII (Technical terms relating to space), of the most recent version of the ITU Radio Regulations are applicable to the interpretation of the provisions in the National Table of Frequency Allocations (NTFA).

**§13. ITU Regions**

For the allocation of frequencies, the world has been divided into three Regions, as shown on the following map and described below:



5-01

The shaded part represents the Tropical Zones

**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 the 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.

**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.

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 "Tropical Zone" (see shaded part in the map above) is defined as:

- a) the whole of that area in Region 2 between the Tropics of Cancer and Capricorn;
- b) 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;
  - ii) that part of Libya 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 (see Article 6).

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

#### **§14. Categories of services and allocations**

##### ***Primary and secondary services***

1) Where, in a box of the National Table of Frequency Allocations (NTFA), a band is indicated as allocated to more than one service, such services are listed in the following order:

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

2) Additional remarks shall be printed in normal characters (example: MOBILE except aeronautical mobile).

3) Stations of a secondary service:

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

4) Where a band is indicated in a footnote of the National Table of Frequency Allocations (NTFA) as allocated to a service “on a secondary basis” in an area smaller than a Region, or in a particular country, this is a secondary service.

5) Where a band is indicated in a footnote of the National Table of Frequency Allocations (NTFA) 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.

#### ***Additional allocations***

1) Where a band is indicated in a footnote of the National Table of Frequency Allocations (NTFA) 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.

2) 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.

3) 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.

#### ***Alternative allocations***

1) Where a band is indicated in a footnote of the National Table of Frequency Allocations (NTFA) 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.

2) 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.

3) 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.

### **Chapter III. Structure of the National Table of Frequency Allocations**

#### **§15. Structure of the National Table of Frequency Allocations**

The structure for the National Table of Frequency Allocations is based on the International Table of Frequency Allocations of the ITU Radio Regulations for Region 3 and follows a four column-format. In reading the National Table of Frequency Allocations, the following meaning is attached to the said four (4) columns:

##### ***Column 1: ITU Region 3 Allocations and Footnotes***

This column reproduces the frequency allocations for ITU Region 3 as contained in the ITU Radio Regulations (edition 2024). All ITU footnotes, whether relevant to Vanuatu or not, are therefore also included in this column. Frequency sub-bands are aligned with Article 5 of the ITU Radio Regulation. The ITU approach to reflecting radiocommunication services in terms of primary and secondary, placing of footnotes and using French alphabetical order, therefore, also applies. Specifically, that:

- The order of listing in each frequency band does not establish priority. Services are simply listed alphabetically according to the French language alphabet;
- Where a footnote is printed next to a service, that footnote applies only to that service;

- Where a footnote is printed at the bottom of a frequency band, that footnote applies to more than one service, or all services allocated to the particular frequency band.

For further details on these and other principles refer to the current version of ITU Radio Regulations.

***Column 2: Vanuatu Allocations and National Footnotes***

This column denotes the radiocommunication service or services allocations for Vanuatu. In most cases these allocations are consistent with the ITU Region 3 allocations. This column also lists the national footnotes applicable to Vanuatu.

***Column 3: Typical Applications***

This column contains the typical known application or applications in a band or sub-band. This column is purely informative and does not grant any priority to the applications listed nor does it mean that such applications are in use in Vanuatu. Where this column is empty, it could be interpreted that the particular frequency band or sub-band is either currently not in use in Vanuatu or that the use of the band could not be confirmed at the time of preparing the table.

***Column 4: Additional Information***

References to additional information relevant to the use of the corresponding frequency band are contained in this column. For example, this includes references to relevant ITU Radio Regulations Articles and Appendices, ITU-R Recommendations, harmonized band plans, standards, and reports, among others. The objective is to inform and provide additional technical information on the bands or sub-bands, and not to exhaustively include all relevant ITU documentation or technical parameters in this column. The relevant ITU documentation should therefore continue to be consulted.

**Chapter IV. National Table of Frequency Allocations**

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>Below 8.3 kHz</b> (Not allocated) 5.53 5.54	<b>Below 8.3 kHz</b> (Not allocated)	Not allocated	
<b>8.3 – 9 kHz</b> METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	<b>8.3 – 9 kHz</b> METEOROLOGICAL AIDS		
<b>9 – 11.3 kHz</b> METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	<b>9 – 11.3 kHz</b> METEOROLOGICAL AIDS RADIONAVIGATION	SRD: Inductive applications (9 kHz-148.5 kHz)  Ultra-Low Power Active Medical Implants (ULP-AMI)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
<b>11.3-14 kHz</b> RADIONAVIGATION	<b>11.3-14 kHz</b> RADIONAVIGATION	Navigational Aids  SRD: Ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Recommendation ITU-R SM.1896  Report ITU-R SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
<b>14-19.95 kHz</b> FIXED MARITIME MOBILE 5.57 5.55 5.56	<b>14-19.95 kHz</b> FIXED MARITIME MOBILE	Maritime mobile communications  SRD: Ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Recommendation ITU-R SM.1896  Report ITU-R .SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>19.95-20.05 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)</p>	<p><b>19.95-20.05 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)</p>	<p>SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>ITU RR ITU RR Article 26 Recommendation ITU-R SM.1896 Report ITU-R SM.2153 Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>
<p><b>20.05-70 kHz</b> FIXED MARITIME MOBILE 5.57 5.56 5.58</p>	<p><b>20.05-70 kHz</b> FIXED MARITIME MOBILE</p>	<p>Maritime mobile communications  SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>Recommendation ITU-R SM.1896 Report ITU-R SM.2153 Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>
<p><b>70-72 kHz</b> RADIONAVIGATION 5.60 Fixed Maritime mobile 5.57 5.59</p>	<p><b>70-72 kHz</b> RADIONAVIGATION Fixed Maritime mobile</p>	<p>Navigational Aids  SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>Recommendation ITU-R SM.1896 Report ITU-R .SM. 2153 Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>
<p><b>72-84 kHz</b> FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60</p>	<p><b>72-84 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION</p>	<p>Maritime mobile communications  Navigational Aids  SRD : Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>Recommendation ITU-R SM.1896 Report ITU-R .SM. 2153 Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>84-86 kHz</b>                      RADIONAVIGATION 5.60                      Fixed                      Maritime mobile 5.57                      5.59</p>	<p><b>84-86 kHz</b>                      RADIONAVIGATION                      Fixed                      Maritime mobile</p>	<p>Navigational Aids                       SRD :                      Ultra-Low Power Active                      Medical Implants(ULP-AMI)                      inductive applications (9 kHz-                      148.5 kHz)</p>	<p>Recommendation ITU-R                      SM.1896                       Report ITU-R.SM.2153                      Inductive SRD: ETSI EN 300 330                       ULP-AMI (9 kHz - 315 kHz) ETSI                      EN 302 195</p>
<p><b>86-90 kHz</b>                      FIXED                      MARITIME MOBILE 5.57                      RADIONAVIGATION 5.60</p>	<p><b>86-90 kHz</b>                      FIXED                      MARITIME MOBILE                      RADIONAVIGATION</p>	<p>Maritime mobile                      communications                       Navigational Aids                       SRD :                      Ultra-Low Power Active                      Medical Implants( ULP-AMI)                      inductive applications (9 kHz-                      148.5 kHz)</p>	<p>Recommendation ITU-R                      SM.1896                       Report ITU-R .SM. 2153                       Inductive SRD : ETSI EN 300 330                      ULP-AMI (9 kHz - 315 kHz)                      ETSI EN 302 195</p>
<p><b>90-110 kHz</b>                      RADIONAVIGATION 5.62                      Fixed                      5.64</p>	<p><b>90-110 kHz</b>                      RADIONAVIGATION                      Fixed</p>	<p>Navigational Aids                       SRD :                      Ultra-Low Power Active                      Medical Implants( ULP-AMI)                      inductive applications (9 kHz-                      148.5 kHz)</p>	<p>Recommendation ITU-R                      SM.1896                       Report ITU-R SM.2153                       Inductive SRD : ETSI EN 300 330                       ULP-AMI (9 kHz - 315 kHz)                      ETSI EN 302 195</p>
<p><b>110-112 kHz</b>                      FIXED                      MARITIME MOBILE                      RADIONAVIGATION 5.60                      5.64</p>	<p><b>110-112 kHz</b>                      FIXED                      MARITIME MOBILE                      RADIONAVIGATION</p>	<p>Maritime mobile                      communications                       Navigational Aids                       SRD :                      Ultra-Low Power Active                      Medical Implants( ULP-AMI)                      inductive applications (9 kHz-                      148.5 kHz)</p>	<p>Recommendation ITU-R                      SM.1896                       Report ITU-R SM.2153                       Inductive SRD : ETSI EN 300 330                       ULP-AMI (9 kHz - 315 kHz)                      ETSI EN 302 195</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>112-117.6 kHz</b> RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.65	<b>112-117.6 kHz</b> RADIONAVIGATION Fixed Maritime mobile	Navigational Aids  Maritime mobile communications  SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
<b>117.6-126 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	<b>117.6-126 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION	Navigational Aids  SRD : Ultra-Low Power Active Medical Implants( ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Recommendation ITU-R SM.1896  Report. ITU-R SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
<b>126-129 kHz</b> RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.65	<b>126-129 kHz</b> RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.65	Navigational Aids  Maritime mobile communications  SRD : Ultra-Low Power Active Medical Implants( ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Recommendation ITU-R SM.1896  Report. ITU-R SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
<b>129-130 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	<b>129-130 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION	Maritime mobile communications  SRD : Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications	Recommendation ITU-R SM.1896  Report ITU-R .SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>130-135.7 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION 5.64</p>	<p><b>130-135.7 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION</p>	<p>Maritime mobile communications  Amateur  SRD : Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>Recommendation ITU-R SM.1896  Report. ITU-R SM. 2153  Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>
<p><b>135.7-137.8 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION Amateur <a href="#">5.67A</a> 5.64 5.67B</p>	<p><b>135.7-137.8 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION Amateur <a href="#">5.67A</a> 5.64 5.67B</p>	<p>Maritime mobile communications  SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) inductive applications (9 kHz-148.5 kHz)</p>	<p>Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p).  Recommendation ITU-R SM.1896  Report ITU-R SM. 2153 Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>
<p><b>137.8-160 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION  5.64</p>	<p><b>137.8-160 kHz</b> FIXED MARITIME MOBILE RADIONAVIGATION</p>	<p>SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) Inductive applications (148.5 - 5000 kHz)</p>	<p>Recommendation ITU-R SM.1896  Report ITU-R SM. 2153 Inductive SRD : ETSI EN 300 330  ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>160-190 kHz</b> FIXED Aeronautical radionavigation	<b>160-190 kHz</b> FIXED Aeronautical radionavigation	Fixed communications  SRD: Ultra-Low Power Active Medical Implants(ULP-AMI) Inductive applications (148.5 - 5000 kHz)	
<b>190-200 kHz</b> AERONAUTICAL RADIONAVIGATION	<b>190-200 kHz</b> AERONAUTICAL RADIONAVIGATION		
<b>200-285 kHz</b> AERONAUTICAL RADIONAVIGATION Aeronautical mobile	<b>255-283.5 kHz</b> AERONAUTICAL RADIONAVIGATION Aeronautical mobile		
<b>285-315 kHz</b> AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	<b>285-315 kHz</b> AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons)	Inductive SRD applications (148.5 - 5000 kHz)	ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195 Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>315-325 kHz</b> AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	<b>315-325 kHz</b> AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons)	Aeronautical NDBs and locators  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>325-405 kHz</b> AERONAUTICAL RADIONAVIGATION Aeronautical mobile	<b>325-405 kHz</b> AERONAUTICAL RADIONAVIGATION Aeronautical mobile	Navigational Aids  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>405-415 kHz</b> RADIONAVIGATION 5.76 Aeronautical mobile	<b>405-415 kHz</b> RADIONAVIGATION Aeronautical mobile	Aeronautical mobile communications  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>415-472 kHz</b> MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.78 5.80	<b>415-472 kHz</b> MARITIME MOBILE Aeronautical radionavigation	Maritime mobile communications  SRD: Inductive SRD applications (148.5 - 5000 kHz)	Under the MMS the use of the band 415-495 kHz is limited to radiotelegraphy. Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>472-479 kHz</b>  MARITIME MOBILE 5.79  Amateur 5.80A  Aeronautical radionavigation 5.77 5.80  5.80B 5.82</p>	<p><b>472-479 kHz</b>  MARITIME MOBILE  Amateur  Aeronautical radionavigation</p>	<p>Maritime mobile communications   Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>479-495 kHz</b>  MARITIME MOBILE 5.79 5.79A  Aeronautical radionavigation 5.77 5.80. 5.82</p>	<p><b>479-495 kHz</b>  MARITIME MOBILE  Aeronautical radionavigation</p>	<p>Limited to radiotelegraphy   Maritime GMDSS   Broadcasting safety information from coast stations   Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Coast Stations in the NAVTEX service on 490 kHz; Resolution 339 (Rev.WRC 07) .  Transmission of navigational and meteorological warnings and urgent info for ships (NBDP telegraphy). ITU RR Articles 31 and 52 apply.   Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>495-505 kHz</b>  MARITIME MOBILE 5.82C 5.82D</p>	<p><b>495-505 kHz</b>  MARITIME MOBILE</p>	<p>Maritime mobile communications   For international NAVDAT systems   Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Articles 31 and 52  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)   Recommendation ITU-R M.2010</p>
<p><b>505-526.5 kHz</b>  MARITIME MOBILE 5.79 5.79A 5.84  AERONAUTICAL RADIONAVIGATION  Aeronautical mobile  Land mobile</p>	<p><b>505-526.5 kHz</b>  MARITIME MOBILE  AERONAUTICAL RADIONAVIGATION  Aeronautical mobile  Land mobile</p>	<p>MW Sound broadcasting (526.5 1606.5 kHz)   Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Coast Stations in the NAVTEX service on 518 kHz; Resolution ITU 339 (Rev.WRC 07) . ITU RR Articles 31 and 52 apply.  Under the MMS the use of the band 505-526.5 kHz is limited to radiotelegraphy.   Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>526.5-535 kHz</b> BROADCASTING Mobile 5.88	<b>526.5-535 kHz</b> BROADCASTING Mobile	Land mobile communications  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>535-1 606.5 kHz</b> BROADCASTING	<b>535-1 606.5 kHz</b> BROADCASTING	Broadcasting	
<b>1 606.5-1 800 kHz</b> FIXED MOBILE RADIOLOCATION RADIONAVIGATION  5.91	<b>1 606.5-1 800 kHz</b> FIXED MOBILE RADIOLOCATION RADIONAVIGATION	Navigational Aids  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>1 800-2 000 kHz</b> AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation  5.97	<b>1 800-2 000 kHz</b> AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation	Amateur communications  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>2 000-2 065 kHz</b> FIXED MOBILE	<b>2 000-2 065 kHz</b> FIXED MOBILE	Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>2 065-2 107 kHz</b> MARITIME MOBILE 5.105 5.106	<b>2 065-2 107 kHz</b> MARITIME MOBILE	Maritime and/or land mobile communications  Fixed Applications  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>2 107-2 170 kHz</b> FIXED MOBILE</p>	<p><b>2 107-2 170 kHz</b> FIXED MOBILE</p>	<p>Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>2 170-2 173.5 kHz</b> MARITIME MOBILE</p>	<p><b>2 170-2 173.5 kHz</b> MARITIME MOBILE</p>	<p>Maritime mobile communications  Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>2 173.5-2 190.5 kHz</b> MOBILE (distress and calling) 5.108 5.109 5.110 5.111</p>	<p><b>2 173.5-2 190.5 kHz</b> MOBILE (distress and calling) 5.108 5.109 5.110 5.111</p>	<p>2 182 kHz is an international distress and calling frequency for radiotelephony.  2 187.5 kHz – DSC for distress and calling  2 174.5 kHz – international distress frequency for NBDP telegraphy  Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>ITU RR Articles 31 and 52  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>2 190.5-2 194 kHz</b> MARITIME MOBILE</p>	<p><b>2 190.5-2 194 kHz</b> MARITIME MOBILE</p>	<p>Maritime and/or land mobile communications  Fixed Applications  Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>2 194-2 300 kHz</b> FIXED MOBILE  5.112</p>	<p><b>2 194-2 300 kHz</b> FIXED MOBILE</p>	<p>Maritime and/or land mobile communications  Fixed Applications  Inductive SRD applications (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>2 300-2 495 kHz</b> FIXED MOBILE BROADCASTING 5.113	<b>2 300-2 498 kHz</b> FIXED MOBILE BROADCASTING	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 23.3 to 23.10 for broadcasting  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)
<b>2 495-2 501 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	<b>2 495-2 501 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	Inductive SRD applications (148.5-5000 kHz)	ITU RR Article 26  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)
<b>2 501-2 502 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space Research	<b>2 501-2 502 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space Research	Maritime and/or land mobile communications  Fixed Applications  Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 26  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)
<b>2 502-2 505 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL	<b>2 502-2 505 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL		
<b>2 502-2 850 kHz</b> FIXED MOBILE	<b>2 505-2 850 kHz</b> FIXED MOBILE	Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)
<b>2 850-3 025 kHz</b> AERONAUTICAL MOBILE (R) 5.111 5.115	<b>2 850-3 025 kHz</b> AERONAUTICAL MOBILE (R)	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Appendix 27 Allotment Plan  ITU RR Article 31 Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)
<b>3 025-3 155 kHz</b> AERONAUTICAL MOBILE (OR)	<b>3 025-3 155 kHz</b> AERONAUTICAL MOBILE (OR)	SRD: Wireless hearing aids Inductive applications (148.5 - 5000 kHz)	ITU RR Appendix 26 Allotment Plan  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBμA/m @ 10m)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>3 155-3 200 kHz</b> FIXED MOBILE except aeronautical mobile (R) 5.116 5.117</p>	<p><b>3 155-3 200 kHz</b> FIXED MOBILE except aeronautical mobile (R)</p>	<p>Fixed applications  SRD: Wireless hearing aids Inductive applications (148.5 - 5000 kHz) Worldwide channel for low power hearing aids (3155-3195 kHz) Additional channels may be assigned in the band 3155-3400 kHz</p>	<p>Recommendation ITU-R SM.1896  Recommendation ITU-R M.1076 Report ITU-R SM.2153  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>3 200-3 230 kHz</b> FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113  5.116</p>	<p><b>3 200-3 230 kHz</b> FIXED MOBILE except aeronautical mobile (R) BROADCASTING</p>	<p>Fixed applications  SRD: Wireless hearing aids Inductive applications (148.5 - 5000 kHz)  Worldwide channel for low power hearing aids (3155-3195 kHz).Additional channels may be assigned in the band 3155-3400 kHz.</p>	<p>ITU RR Article 23.3 to 23.10 for broadcasting  Recommendation ITU-R SM.1896  Recommendation ITU-R M.1076-1  Report ITU-R SM. 2153 Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>
<p><b>3 230-3 400 kHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118</p>	<p><b>3 230-3 400 kHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING</p>	<p>Inductive SRD applications (148.5 - 5000 kHz)  Worldwide channel for low power hearing aids (3155-3195 kHz).Additional channels may be assigned in the band 3155-3400 kHz.</p>	<p>ITU RR Article 23.3 to 23.10 for broadcasting  Recommendation ITU-R SM.1896  Recommendation ITU-R M.1076  Report ITU-R SM.2153 Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>3 400-3 500 kHz</b> AERONAUTICAL MOBILE (R)	<b>3 400-3 500 kHz</b> AERONAUTICAL MOBILE (R)	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Appendix 27 Allotment Plan  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>3 500-3 900 kHz</b> AMATEUR FIXED MOBILE	<b>3 500-3 900 kHz</b> AMATEUR FIXED MOBILE	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 51 and 52  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>3 900-3 950 kHz</b> AERONAUTICAL MOBILE (OR) BROADCASTING	<b>3 900-3 950 kHz</b> AERONAUTICAL MOBILE (OR) BROADCASTING	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Appendix 26 Allotment Plan  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>3 950-4 000 kHz</b> FIXED BROADCASTING  5.126	<b>3 950-4 000 kHz</b> FIXED BROADCASTING	Fixed Applications  Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 23.3 to 23.10  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>4 000-4 063 kHz</b> FIXED MARITIME MOBILE 5.127  5.126	<b>4 000-4 063 kHz</b> FIXED MARITIME MOBILE	Maritime mobile communications Use of the band 4000-4063 kHz by the MMS is limited to ship stations using radiotelephony  Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>4 063-4 438 kHz</b>                      MARITIME MOBILE 5.79A 5.82D 5.109 5.110                      5.130 5.131 5.132 5.128</p>	<p><b>4 063-4 438 kHz</b>                      MARITIME MOBILE</p>	<p>Maritime communications</p> <p>Inductive SRD applications                      (148.5 - 5000 kHz)</p> <p>4177.5 kHz – international                      distress frequency for NBDP                      telegraphy;</p> <p>4125 kHz – use of this                      frequency prescribed in ITU RR                      Article 31.</p> <p>4209.5 kHz – exclusive for                      transmission by coast stations                      of meteorological and                      navigational warnings and                      urgent information to ships                      (NBDP)</p> <p>4209.5 kHz - Coast Stations in                      the NAVTEX service -                      Resolution 339 . ITU RR                      Articles 31 and 52 apply.</p> <p>4207.5 kHz – DSC for distress                      and calling;</p> <p>4210 kHz – maritime safety                      information (MSI);</p>	<p>ITU RR Appendix 17 Allotment                      Plan</p> <p>ITU RR Appendix 25 Allotment                      Plan</p> <p>Inductive SRD: ETSI EN                      300 330 (magnetic field -15                      dBµA/m @ 10m)</p>
<p><b>4 438-4 488 kHz</b>                      FIXED                      MOBILE except aeronautical mobile                      Radiolocation 5.132A</p>	<p><b>4 438-4 488 kHz</b>                      FIXED                      MOBILE except aeronautical mobile                      Radiolocation</p>	<p>Fixed and Mobile applications</p> <p>Inductive SRD applications                      (148.5 - 5000 kHz)</p>	<p>Inductive SRD: ETSI EN                      300 330 (magnetic field -15                      dBµA/m @ 10m)</p>
<p><b>4 488 -4 650 kHz</b>                      FIXED                      MOBILE except aeronautical mobile</p>	<p><b>4 488 -4 650 kHz</b>                      FIXED                      MOBILE except aeronautical mobile</p>		<p>Inductive SRD: ETSI EN                      300 330 (magnetic field -15                      dBµA/m @ 10m)</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>4650 – 4700 kHz</b> AERONAUTICAL MOBILE (R)	<b>4650 – 4700 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)  Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Appendix 27 Allotment Plan  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>4 700-4 750 kHz</b> AERONAUTICAL MOBILE (OR)	<b>4 700-4 750 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)  Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Appendix 26 Allotment Plan  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>4 750-4 850 kHz</b> FIXED BROADCASTING 5.113 Land Mobile	<b>4 750-4 850 kHz</b> FIXED BROADCASTING Land Mobile	Land mobile Fixed Applications  HF Sound broadcasting  Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 23.3 to 23.10  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>4 850-4 995 kHz</b> FIXED LAND MOBILE BROADCASTING 5.113	<b>4 850-4 995 kHz</b> FIXED LAND MOBILE BROADCASTING	Inductive SRD applications (148.5 - 5000 kHz)	ITU RR Article 23.3 to 23.10  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>4 995-5 003 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	<b>4 995-5 003 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)		ITU RR Article 26  Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
<b>5 003-5 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research	<b>5 003-5 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research	Sound broadcasting  Fixed Applications	ITU RR Article 26
<b>5 005-5 060 kHz</b> FIXED BROADCASTING 5.113	<b>5 005-5 060 kHz</b> FIXED BROADCASTING	Fixed and Mobile applications  Maritime applications	ITU RR Article 23.3 to 23.10

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>5 060-5 250 kHz</b> FIXED Mobile except aeronautical mobile</p> <p>5.133</p>	<p><b>5 060-5 250 kHz</b> FIXED Mobile except aeronautical mobile</p>	<p>Fixed Applications</p>	
<p><b>5 250-5 275 kHz</b> FIXED MOBILE except aeronautical mobile Radiolocation 5.132A</p>	<p><b>5 250-5 275 kHz</b> FIXED MOBILE except aeronautical mobile Radiolocation</p>	<p>Aeronautical mobile Fixed and Mobile applications</p>	
<p><b>5 275 -5 351.5kHz</b> FIXED MOBILE except aeronautical mobile</p>	<p><b>5 275 -5 351.5kHz</b> FIXED MOBILE except aeronautical mobile</p>	<p>Fixed and Mobile Applications</p>	
<p><b>5 351.5 -5 366.5 kHz</b> FIXED MOBILE except aeronautical mobile Amateur 5.133B</p>	<p><b>5 351.5 -5 366.5 kHz</b> FIXED MOBILE except aeronautical mobile Amateur</p>	<p>Fixed and Mobile Applications Amateur in 5 351.5 -5 366.5 kHz</p>	
<p><b>5 366.5 -5 450 kHz</b> FIXED MOBILE except aeronautical mobile</p>	<p><b>5 366.5 -5 450 kHz</b> FIXED MOBILE except aeronautical mobile</p>		
<p><b>5 450 kHz – 5 480 kHz</b> FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE</p>	<p><b>5 450 kHz – 5 480 kHz</b> FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE</p>	<p>Aeronautical mobile (OR)</p>	
<p><b>5 480-5 680 kHz</b> AERONAUTICAL MOBILE (R)</p> <p>5.111 5.115</p>	<p><b>5 480-5 680 kHz</b> AERONAUTICAL MOBILE (R)</p>	<p>Aeronautical mobile (R) Search and rescue operations at 5680 kHz</p>	<p>ITU RR Appendix 27 Allotment Plan</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>5 680-5 730 kHz</b> AERONAUTICAL MOBILE (OR) 5.111 5.115	<b>5 680-5 730 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)  5 680 kHz may be used under the MMS for search and rescue operations (see Article 31). 6215 kHz – use of this frequency prescribed in ITU RR Article 31.	ITU RR Appendix 26 Allotment Plan
<b>5 730-5 900 kHz</b> FIXED Mobile except aeronautical mobile (R)	<b>5 730-5 900 kHz</b> FIXED Mobile except aeronautical mobile (R)		
<b>5 900-5 950 kHz</b> BROADCASTING 5.134 5.136	<b>5 900-5 950 kHz</b> BROADCASTING	HF Sound Broadcasting	
<b>5 950-6 200 kHz</b> BROADCASTING	<b>5 950-6 200 kHz</b> BROADCASTING	Maritime mobile communications	
<b>6 200-6 525 kHz</b> MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137A 5.137	<b>6 200-6 525 kHz</b> MARITIME MOBILE	Maritime and/or land mobile communications  6312 kHz and 6215 kHz – DSC for distress and calling; 6268 kHz – international distress frequency for NBDP telegraphy; 6314 kHz – maritime safety information (MSI);  SRD: Inductive applications	ITU RR Appendix 17 Allotment Plan  ITU RR Appendix 25 Allotment Plan  ITU RR Article 31
<b>6 525-6 685 kHz</b> AERONAUTICAL MOBILE (R)	<b>6 525-6 685 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	ITU RR Appendix 27 Allotment Plan
<b>6 685-6 765 kHz</b> AERONAUTICAL MOBILE (OR)	<b>6 685-6 765 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>6 765-7 000 kHz</b> FIXED MOBILE except aeronautical mobile (R)  5.138	<b>6 765-7 000 kHz</b> FIXED MOBILE except aeronautical mobile (R)	ISM band (6765-6795 kHz): centre frequency 6 780 kHz	Recommendation ITU-R SM.1896,  Report ITU-R SM.2153
<b>7 000-7 100 kHz</b> AMATEUR AMATEUR-SATELLITE  5.140 5.141 5.141A	<b>7 000-7 100 kHz</b> AMATEUR AMATEUR-SATELLITE	Amateur communications  Amateur-satellite communications	
<b>7 100-7 200 kHz</b> AMATEUR 5.141A 5.141B	<b>7 100-7 200 kHz</b> AMATEUR	Amateur communications	
<b>7 200-7 300 kHz</b> BROADCASTING	<b>7 200-7 300 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures
<b>7 300-7 400 kHz</b> BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	<b>7 300-7 400 kHz</b> BROADCASTING	HF Sound Broadcasting  SRD applications (7 400 – 8 800 kHz)  This band is also used for fixed and Mobile Applications in some countries	ITU RR Article 12 Planning Procedures and Resolution 517
<b>7 400-7 450 kHz</b> BROADCASTING 5.143B 5.143C	<b>7 400-7 450 kHz</b> BROADCASTING	SRD applications (7 400 – 8 800 kHz)	ITU RR Article 12 Planning Procedures  Recommendation ITU-R SM.1896  Report ITU-R SM. 2153
<b>7 450-8 100 kHz</b> FIXED MOBILE except aeronautical mobile (R) 5.144	<b>7 450-8 100 kHz</b> FIXED MOBILE except aeronautical mobile (R)	SRD applications (7 400 – 8 800 kHz)	Recommendation ITU-R SM.1896  Report ITU-R SM. 2153

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>8 100-8 195 kHz</b> FIXED MARITIME MOBILE	<b>8 100-8 195 kHz</b> FIXED MARITIME MOBILE	Maritime mobile communications  SRD applications (7 400 – 8 800 kHz)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>8 195-8 815 kHz</b> MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145 5.111	<b>8 195-8 815 kHz</b> MARITIME MOBILE	8414.5 kHz – DSC for distress and calling; 8 376.5 kHz – international distress frequency for NBDP telegraphy  8416.5 kHz – maritime safety information (MSI);	ITU RR Appendix 17 Allotment Plan  ITU RR Appendix 25 Allotment Plan  ITU RR Article 31  Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>8 815-8 965 kHz</b> AERONAUTICAL MOBILE (R)	<b>8 815-8 965 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	ITU RR Appendix 27 Allotment Plan
<b>8 965-9 040 kHz</b> AERONAUTICAL MOBILE (OR)	<b>8 965-9 040 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan
<b>9 040-9 305 kHz</b> FIXED	<b>9 040-9 305 kHz</b> FIXED	Fixed Applications	
<b>9 305 -9 355 kHz</b> FIXED Radiolocation 5.145A	<b>9 305 -9 355 kHz</b> FIXED Radiolocation		
<b>9355-9 400 kHz</b> FIXED	<b>9355-9 400 kHz</b> FIXED		
<b>9400-9500 kHz</b> BROADCASTING 5.134  5.146	<b>9400-9500 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures  Resolution 517 (WRC-19)
<b>9 500-9 900 kHz</b> BROADCASTING	<b>9 500-9 900 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.147			
<b>9 900-9 995 kHz</b> FIXED	<b>9 900-9 995 kHz</b> FIXED	Search and rescue operations at 10003 kHz ± 3 kHz	
<b>9 995-10 003 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	<b>9 995-10 003 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)	Search and rescue operations at 10003 kHz ± 3 kHz Inductive SRD applications (10.2 - 11 MHz)	ITU RR Article 26
<b>10 003-10 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research  5.111	<b>10 003-10 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research	Aeronautical mobile communications (R)  Search and rescue operations at 10003 kHz ± 3 kHz	ITU RR Article 26
<b>10 005-10 100 kHz</b> AERONAUTICAL MOBILE (R) 5.111	<b>10 005-10 100 kHz</b> AERONAUTICAL MOBILE (R)		ITU RR Appendix 27 Allotment Plan
<b>10 100-10 150 kHz</b> FIXED Amateur	<b>10 100-10 150 kHz</b> FIXED Amateur	Fixed Applications Amateur communications	
<b>10 150-11 175 kHz</b> FIXED Mobile except aeronautical mobile (R)	<b>10 150-11 175 kHz</b> FIXED Mobile except aeronautical mobile (R)	Maritime applications	
<b>11 175-11 275 kHz</b> AERONAUTICAL MOBILE (OR)	<b>11 175-11 275 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan
<b>11 275-11 400 kHz</b> AERONAUTICAL MOBILE (R)	<b>11 275-11 400 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	ITU RR Appendix 27 Allotment Plan
<b>11 400-11 600 kHz</b> FIXED	<b>11 400-11 600 kHz</b> FIXED	Fixed Applications	
<b>11 600-11 650 kHz</b> BROADCASTING 5.134 5.146	<b>11 600-11 650 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures Resolution 517 (WRC-19)
<b>11 650-12 050 kHz</b> BROADCASTING	<b>11 650-12 050 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.147			
<b>12 050-12 100 kHz</b> BROADCASTING 5.134 5.146	<b>12 050-12 100 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures  Resolution 517 (WRC-19)
<b>12 100-12 230 kHz</b> FIXED	<b>12 100-12 230 kHz</b> FIXED	Fixed Applications	
<b>12 230-13 200 kHz</b> MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145	<b>12 230-13 200 kHz</b> MARITIME MOBILE	Maritime mobile communications  12 577 kHz – DSC for distress and calling; 12 520 kHz – international distress frequency for NBDP telegraphy; 12 579 kHz – maritime safety information (MSI);	ITU RR Appendix 17 Channelling Plan  ITU RR Appendix 25 Allotment Plan  ITU RR Article 31
<b>13 200-13 260 kHz</b> AERONAUTICAL MOBILE (OR)	<b>13 200-13 260 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan
<b>13 260-13 360 kHz</b> AERONAUTICAL MOBILE (R)	<b>13 260-13 360 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	ITU RR Appendix 27 Allotment Plan
<b>13 360-13 410 kHz</b> FIXED RADIO ASTRONOMY 5.149	<b>13 360-13 410 kHz</b> FIXED RADIO ASTRONOMY	Radio Astronomy (Observations of decametric radiation)  Fixed Applications	
<b>13 410-13 450 kHz</b> FIXED Mobile except aeronautical mobile (R)	<b>13 410-13 450 kHz</b> FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	
<b>13 450-13 550 kHz</b> FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	<b>13 450-13 550 kHz</b> FIXED Mobile except aeronautical mobile (R) Radiolocation	Inductive SRD applications (13 553-13 567kHz)	
<b>13 550-13 570 kHz</b> FIXED	<b>13 550-13 570 kHz</b> FIXED		Recommendation ITU-R SM.1896

ITU Region 3	Vanuatu	Typical Applications	Additional information
Mobile except aeronautical mobile (R) 5.150	Mobile except aeronautical mobile (R)		Report ITU-R SM.2153 ISM band (13 553-13 567kHz)
<b>13 570-13 600 kHz</b> BROADCASTING 5.134 5.151	<b>13 570-13 600 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures  Resolution 517 (WRC-19)
<b>13 600-13 800 kHz</b> BROADCASTING	<b>13 600-13 800 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures
<b>13 800-13 870 kHz</b> BROADCASTING 5.134 5.151	<b>13 800-13 870 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures  Resolution 517 (WRC-19)
<b>13 870-14 000 kHz</b> FIXED Mobile except aeronautical mobile (R)	<b>13 870-14 000 kHz</b> FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	
<b>14 000-14 250 kHz</b> AMATEUR AMATEUR-SATELLITE	<b>14 000-14 250 kHz</b> AMATEUR AMATEUR-SATELLITE	Amateur communications  Amateur-satellite communications	
<b>14 250-14 350 kHz</b> AMATEUR 5.152	<b>14 250-14 350 kHz</b> AMATEUR	Amateur communications	
<b>14 350-14 990 kHz</b> FIXED Mobile except aeronautical mobile (R)	<b>14 350-14 990 kHz</b> FIXED Mobile except aeronautical mobile (R)	Fixed Applications	
<b>14 990-15 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz)  5.111	<b>14 990-15 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz)	Search and rescue operations at 14993 kHz	
<b>15 005-15 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL	<b>15 005-15 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL		

ITU Region 3	Vanuatu	Typical Applications	Additional information
Space research	Space research		
<b>15 010-15 100 kHz</b> AERONAUTICAL MOBILE (OR)	<b>15 010-15 100 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan
<b>15 100-15 600 kHz</b> BROADCASTING	<b>15 100-15 600 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures
<b>15 600-15 800 kHz</b> BROADCASTING 5.134  5.146	<b>15 600-15 800 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures  Resolution 517 (WRC-19)
<b>15 800-16 100 kHz</b> FIXED 5.153	<b>15 800-16 100 kHz</b> FIXED	Fixed Applications	
<b>16 100-16 200 kHz</b> FIXED Radiolocation 5.145A	<b>16 100-16 200 kHz</b> FIXED Radiolocation		
<b>16 200-16 360 kHz</b> FIXED	<b>16 200-16 360 kHz</b> FIXED	Fixed Applications	
<b>16 360-17 410 kHz</b> MARITIME MOBILE 5.109 5.110 5.132 5.137A. 5.145	<b>16 360-17 410 kHz</b> MARITIME MOBILE	Maritime mobile communications 16 804.5kHz – DSC for distress and calling; 16 695 kHz – international distress frequency for NBDP telegraphy; 16 806.5 kHz – maritime safety information (MSI)	ITU RR Appendix 17 Allotment Plan  ITU RR Appendix 25 Allotment Plan  ITU RR Article 31 .
<b>17 410-17 480 kHz</b> FIXED	<b>17 410-17 480 kHz</b> FIXED		
<b>17 480-17 550 kHz</b> BROADCASTING 5.134 5.146	<b>17 480-17 550 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures and Resolution 517 (WRC-19)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>17 550-17 900 kHz</b> BROADCASTING	<b>17 550-17 900 kHz</b> BROADCASTING		ITU RR Article 12 Planning Procedures
<b>17 900-17 970 kHz</b> AERONAUTICAL MOBILE (R)	<b>17 900-17 970 kHz</b> AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	ITU RR Appendix 27 Allotment Plan
<b>17 970-18 030 kHz</b> AERONAUTICAL MOBILE (OR)	<b>17 970-18 030 kHz</b> AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	ITU RR Appendix 26 Allotment Plan
<b>18 030-18 052 kHz</b> FIXED	<b>18 030-18 052 kHz</b> FIXED	Fixed Applications	
<b>18 052-18 068 kHz</b> FIXED Space research	<b>18 052-18 068 kHz</b> FIXED Space research	Fixed Applications	
<b>18 068-18 168 kHz</b> AMATEUR AMATEUR-SATELLITE  5.154	<b>18 068-18 168 kHz</b> AMATEUR AMATEUR-SATELLITE	Amateur communications  Amateur-satellite communications	
<b>18 168-18 780 kHz</b> FIXED Mobile except aeronautical mobile	<b>18 168-18 780 kHz</b> FIXED Mobile except aeronautical mobile	Fixed Applications	
<b>18 780-18 900 kHz</b> MARITIME MOBILE	<b>18 780-18 900 kHz</b> MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Allotment Plan
<b>18 900-19 020 kHz</b> BROADCASTING 5.134  5.146	<b>18 900-19 020 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures and Resolution 517 (WRC-19)
<b>19 020-19 680 kHz</b> FIXED	<b>19 020-19 680 kHz</b> FIXED	Fixed Applications	
<b>19 680-19 800 kHz</b> MARITIME MOBILE 5.132	<b>19 680-19 800 kHz</b> MARITIME MOBILE	Maritime applications	ITU RR Appendix 17 Allotment Plan

ITU Region 3	Vanuatu	Typical Applications	Additional information
		The frequency 19 680.5 kHz is the international frequency for transmission of MSI.	ITU RR Appendix 25 Allotment Plan
<b>19 800-19 990 kHz</b> FIXED	<b>19 800-19 990 kHz</b> FIXED	Search and rescue operations at 19993 kHz ±3 kHz	
<b>19 990-19 995 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research  5.111	<b>19 990-19 995 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research	Search and rescue operations at 19993 kHz ±3 kHz	ITU RR ITU RR Article 26
<b>19 995-20 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)  5.111	<b>19 995-20 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)	Search and rescue operations at 19993 kHz ±3 kHz	ITU RR ITU RR Article 26
<b>20 010-21 000 kHz</b> FIXED Mobile	<b>20 010-21 000 kHz</b> FIXED Mobile		
<b>21 000-21 450 kHz</b> AMATEUR AMATEUR-SATELLITE	<b>21 000-21 450 kHz</b> AMATEUR AMATEUR-SATELLITE	Amateur communications  Amateur-satellite communications	
<b>21 450-21 850 kHz</b> BROADCASTING	<b>21 450-21 850 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures
<b>21 850-21 870 kHz</b> FIXED 5.155A 5.155	<b>21 850-21 870 kHz</b> FIXED	Fixed Applications	
<b>21 870-21 924 kHz</b> FIXED 5.155B	<b>21 870-21 924 kHz</b> FIXED	Aeronautical mobile communications (R)	
<b>21 924-22 000 kHz</b> AERONAUTICAL MOBILE (R)	<b>21 924-22 000 kHz</b> AERONAUTICAL MOBILE (R)	Maritime applications	ITU RR Appendix 27 Allotment Plan

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>22 000-22 855 kHz</b> MARITIME MOBILE 5.132 5.137A  5.156	<b>22 000-22 855 kHz</b> MARITIME MOBILE	Fixed Applications  The frequency 22 376 kHz is the international frequency for transmission of MSI.	ITU RR Appendix 17 Allotment Plan . ITU RR Appendix 25 Allotment Plan .
<b>22 855-23 000 kHz</b> FIXED 5.156	<b>22 855-23 000 kHz</b> FIXED	Fixed Applications	
<b>23 000-23 200 kHz</b> FIXED Mobile except aeronautical mobile (R)  5.156	<b>23 000-23 200 kHz</b> FIXED Mobile except aeronautical mobile (R)		
<b>23 200-23 350 kHz</b> FIXED 5.156A AERONAUTICAL MOBILE (OR)	<b>23 200-23 350 kHz</b> FIXED AERONAUTICAL MOBILE (OR)	Fixed Applications  Aeronautical mobile communications (OR)	
<b>23 350-24 000 kHz</b> FIXED MOBILE except aeronautical mobile 5.157	<b>23 350-24 000 kHz</b> FIXED MOBILE except aeronautical mobile	Fixed and mobile applications	
<b>24 000-24 450 kHz</b> FIXED LAND MOBILE	<b>24 000-24 450 kHz</b> FIXED LAND MOBILE	Fixed Applications	
<b>24 450 -24 600 kHz</b> FIXED LAND MOBILE Radiolocation 5.132A	<b>24 450 -24 600 kHz</b> FIXED LAND MOBILE Radiolocation	Fixed Applications	
<b>24 600-24 890 kHz</b> FIXED LAND MOBILE	<b>24 600-24 890 kHz</b> FIXED LAND MOBILE		
<b>24 890 kHz-24 990 kHz</b> AMATEUR	<b>24 890 kHz-24 990 kHz</b> AMATEUR	Amateur applications	

ITU Region 3	Vanuatu	Typical Applications	Additional information
AMATEUR SATELLITE	AMATEUR SATELLITE		
<b>24 990-25 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	<b>24 990-25 005 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		ITU RR Article 26
<b>25 005-25 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research	<b>25 005-25 010 kHz</b> STANDARD FREQUENCY AND TIME SIGNAL Space research		ITU RR Article 26
<b>25 010-25 070 kHz</b> FIXED MOBILE except aeronautical mobile	<b>25 010-25 070 kHz</b> FIXED MOBILE except aeronautical mobile	Fixed and Mobile applications	
<b>25 070-25 210 kHz</b> MARITIME MOBILE	<b>25 070-25 210 kHz</b> MARITIME MOBILE	Maritime applications International DSC calling at 25208.5 kHz	ITU RR Appendix 17 Allotment Plan  ITU RR Appendix 25 Allotment Plan .
<b>25 210-25 550 kHz</b> FIXED MOBILE except aeronautical mobile	<b>25 210-25 550 kHz</b> FIXED MOBILE except aeronautical mobile	Fixed and Mobile Applications	
<b>25 550-25 670 kHz</b> RADIO ASTRONOMY  5.149	<b>25 550-25 670 kHz</b> RADIO ASTRONOMY		
<b>25 670-26 100 kHz</b> BROADCASTING	<b>25 670-26 100 kHz</b> BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures .
<b>26 100-26 175 kHz</b> MARITIME MOBILE 5.132	<b>26 100-26 175 kHz</b> MARITIME MOBILE 5.132	Maritime applications  The frequency 26 100.5 kHz is the international frequency for transmission of MSI. International DSC calling at 26121 kHz	ITU RR Appendix 17 Allotment Plan . ITU RR Appendix 25 Allotment Plan .

ITU Region 3	Vanuatu	Typical Applications	Additional information
		Fixed Applications	
<b>26 175-26200 kHz</b> FIXED MOBILE except aeronautical mobile	<b>26 175-26 200 kHz</b> FIXED MOBILE except aeronautical mobile	Fixed and mobile applications	
<b>26 200-26 350 kHz</b> FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	<b>26 200-26 350 kHz</b> FIXED MOBILE except aeronautical mobile Radiolocation	Fixed and mobile applications Inductive/non-specific SRD applications (26 957-27 283 kHz):Wireless control devices Measurement equipment	
<b>26 350-27 500 kHz</b> FIXED MOBILE except aeronautical mobile 5.150	<b>26 350-27 500 kHz</b> FIXED MOBILE except aeronautical mobile	Fixed Applications  Mobile systems (single frequency)  CB Radio (26.96-27.410 MHz)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153  Recommendation ITU-R SM.2103
<b>27.5-28 MHz</b> METEOROLOGICAL AIDS FIXED MOBILE	<b>27.5-28 MHz</b> METEOROLOGICAL AIDS FIXED MOBILE	Fixed and mobile applications  Meteorological applications	
<b>28-29.7 MHz</b> AMATEUR AMATEUR-SATELLITE	<b>28-29.7 MHz</b> AMATEUR AMATEUR-SATELLITE	Amateur communications  Amateur-satellite communications	
<b>29.7-30.005 MHz</b> FIXED MOBILE	<b>29.7-30.005 MHz</b> FIXED MOBILE	Fixed Applications	
<b>30.005-30.01 MHz</b> SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	<b>30.005-30.01 MHz</b> SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH		
<b>30.01-37.5 MHz</b>	<b>30.01-37.5 MHz</b>		

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED MOBILE	FIXED MOBILE		
<b>37.5-38.25 MHz</b> FIXED MOBILE Radio astronomy  5.149	<b>37.5-38.25 MHz</b> FIXED MOBILE Radio astronomy	Private Mobile Radio  Radio Astronomy (Observations of decametric radiation)	
<b>38.25-39.5 MHz</b> FIXED MOBILE	<b>38.25-39.5 MHz</b> FIXED MOBILE	Private Mobile Radio Mobile applications	
<b>39.5-39.986 MHz</b> FIXED MOBILE RADIOLOCATION 5.132A	<b>39.5-39.986 MHz</b> FIXED MOBILE RADIOLOCATION	Mobile applications	
<b>39.986-40 MHz</b> FIXED MOBILE RADIOLOCATION 5.132A Space research	<b>39.986-40 MHz</b> FIXED MOBILE RADIOLOCATION Space research	Private Mobile Radio	
<b>40-40.02 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A Space research	<b>40-40.02 MHz</b> FIXED MOBILE Earth exploration-satellite (active) Space research	Private Mobile Radio  Fixed applications	
<b>40.02-40.98 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.150	<b>40.02-40.98 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.150	Private Mobile Radio  Fixed applications  SRD (40.66 – 40.7 MHz): - Radio Microphone	Recommendation ITU-R SM.1896,  Report ITU-R SM.2153

ITU Region 3	Vanuatu	Typical Applications	Additional information
		- Wireless control devices Measurement equipment  ISM band (40.66-40.70 MHz): centre frequency 40.68 MHz	
<b>40.98-41.015 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A Space research 5.160 5.161	<b>40.98-41.015 MHz</b> FIXED MOBILE Earth exploration-satellite (active) Space research	Private Mobile Radio	
<b>41.015-42 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	<b>41.015-42 MHz</b> FIXED MOBILE Earth exploration-satellite (active)	Private Mobile Radio  Fixed Applications	
<b>42-42.5 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.161	<b>42-42.5 MHz</b> FIXED MOBILE Earth exploration-satellite (active)	Fixed and mobile applications	
<b>42.5-44 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	<b>42.5-44 MHz</b> FIXED MOBILE Earth exploration-satellite (active)	Private Mobile Radio  Meteor Burst (45.3-46.9 MHz)	
<b>44-47 MHz</b> FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.162 5.162A	<b>44-47 MHz</b> FIXED MOBILE Earth exploration-satellite (active)	Private Mobile Radio Paired with 47.5-49.1 MHz Meteor Burst (47.5-49.1 MHz)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>47-50 MHz</b> FIXED MOBILE BROADCASTING Earth exploration-satellite (active) 5.159A 5.162A	<b>47-50 MHz</b> FIXED MOBILE BROADCASTING Earth exploration-satellite (active)	Paired with 45.3-46.9 MHz	
<b>50-54 MHz</b> AMATEUR     5.162A 5.167 5.167A 5.168 5.170	<b>50-54 MHz</b> AMATEUR	Broadcasting systems	
<b>54-68 MHz</b> FIXED MOBILE BROADCASTING 5.162A	<b>54-68 MHz</b> FIXED MOBILE BROADCASTING	Land mobile radio	
<b>68-74.8 MHz</b> FIXED MOBILE 5.149 5.176 5.179	<b>68-74.8 MHz</b> FIXED MOBILE	Private Mobile Radio and/or Public Access Mobile Radio  Fixed application	
<b>74.8-75.2 MHz</b> AERONAUTICAL RADIONAVIGATION 5.180 5.181	<b>74.8-75.2 MHz</b> AERONAUTICAL RADIONAVIGATION	Instrument Landing System (ILS)  Marker beacons (75 MHz)	
<b>75.2-75.4 MHz</b> FIXED MOBILE   5.179	<b>75.2-75.4 MHz</b> FIXED MOBILE	Private Mobile Radio and/or Public Access Mobile Radio  Fixed and mobile application	
<b>75.4-87 MHz</b>	<b>75.4-87 MHz</b>		

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED MOBILE 5.182 5.183 5.188	FIXED MOBILE		
<b>87-100 MHz</b> FIXED MOBILE BROADCASTING	<b>87-100 MHz</b> FIXED MOBILE BROADCASTING	FM Sound broadcasting (87.5-108 MHz)	
<b>100-108 MHz</b> BROADCASTING 5.192 5.194	<b>100-108 MHz</b> BROADCASTING	FM Sound broadcasting (87.5-108 MHz)	
<b>108-117.975 MHz</b> AERONAUTICAL RADIONAVIGATION      5.197 5.197A	<b>108-117.975 MHz</b> AERONAUTICAL RADIONAVIGATION	Aeronautical mobile communications (108-117.975 MHz) Safety and regularity of flights;  Instrument Landing System (ILS) / Localiser (108-112 MHz)  VHF Omni-directional Range (VOR) (112-117.975 MHz)  In the band 108-112 MHz AM(R)S limited to ground-based transmitters.	AM(R)S shall operate in accordance with ITU RR Resolution 413 (Rev.WRC-07).
<b>117.975-137 MHz</b> AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R) 5.198A 5.198B 5.111 5.200 5.201 5.202	<b>117.975-137 MHz</b> AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R)	117.975-121.450 MHz Aeronautical mobile communications  121.450-121.550 MHz International Distress Frequency (121.5 MHz)  121.550-137.000 MHz Aeronautical mobile communications 123.1 MHz - auxiliary emergency frequency	ITU RR Article 31

ITU Region 3	Vanuatu	Typical Applications	Additional information
		Safety and regularity of flights EPIRBs at 121.5 MHz	
<p><b>137-137.025 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.206 5.204 5.205 5.207</p>	<p><b>137-137.025 MHz</b> SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)</p>		
<p><b>137.025-137.175 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Ear SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.206 Mobile-satellite (space-to-Earth) 5.208 5.208A 5.208B 5.209 5.204 5.205 5.207</p>	<p><b>137.025-137.175 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth)</p>		
<p><b>137.175-137.825 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208. 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed</p>	<p><b>137.175-137.825 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)</p>	NOAA <sup>3</sup> meteorology satellite (137.500-137.620 MHz)	

<sup>3</sup> The United States National Oceanic and Atmospheric Administration

ITU Region 3	Vanuatu	Typical Applications	Additional information
Mobile except aeronautical mobile (R) 5.206 5.204 5.205 5.207			
<b>137.825-138 MHz</b> SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R). 5.206 Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.207	<b>137.825-138 MHz</b> SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth)		
<b>138-143.6 MHz</b> FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	<b>138-143.6 MHz</b> FIXED MOBILE Space research (space-to-Earth)	In some countries this band is also used for Private Mobile Radio and/or Public Access Mobile Radio	
<b>143.6-143.65 MHz</b> FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.207 5.213	<b>143.6-143.65 MHz</b> FIXED MOBILE SPACE RESEARCH (space-to-Earth)	In some countries this band is also used for Private Mobile Radio and/or Public Access Mobile Radio	
<b>143.65-144 MHz</b> FIXED MOBILE Space research (space-to-Earth) 5.207. 5.213	<b>143.65-144 MHz</b> FIXED MOBILE Space research (space-to-Earth)		
<b>144-146 MHz</b> AMATEUR AMATEUR-SATELLITE 5.216	<b>144-146 MHz</b> AMATEUR AMATEUR-SATELLITE	Amateur satellite systems	
<b>146-148 MHz</b> AMATEUR FIXED	<b>146-148 MHz</b> AMATEUR FIXED	Private Mobile Radio  Fixed applications	

ITU Region 3	Vanuatu	Typical Applications	Additional information
MOBILE 5.217	MOBILE	Maritime mobile communications (146.020 MHz)	
<b>148-149.9 MHz</b> FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221	<b>148-149.9 MHz</b> FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space)	Mobile satellite communications (LEO)  Fixed applications Private Mobile Radio	
<b>149.9-150.05 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	<b>149.9-150.05 MHz</b> MOBILE-SATELLITE (Earth-to-space)	Mobile satellite communications (LEO)	
<b>150.05-154 MHz</b> FIXED MOBILE  5.225	<b>150.05-154 MHz</b> FIXED MOBILE	Private Mobile Radio and/or Public Access Mobile Radio Paging Fixed applications	
<b>154-156.4875 MHz</b> FIXED MOBILE except aeronautical mobile (R) 5.225A 5.226	<b>154-156.4875 MHz</b> FIXED MOBILE except aeronautical mobile (R)	154-156 MHz Private Mobile Radio  156.00-156.4875 MHz Maritime mobile communications (Ship stations) Land mobile in areas remote from coast	
<b>156.4875-156.5625 MHz</b> MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	<b>156.4875-156.5625 MHz</b> MARITIME MOBILE (distress and calling via DSC)	Maritime mobile distress, safety and calling frequency 156.525 MHz for maritime mobile VHF radiotelephone service using DSC.  The bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz may also be used for land mobile services while protecting the maritime mobile service.	ITU RR Articles 31 and 52  ITU RR Appendix 18

ITU Region 3	Vanuatu	Typical Applications	Additional information
		Paired with 160.625-160.950 MHz, single frequency 156.3 MHz and in the band 156.375-156.475 MHz	
<b>156.5625-156.7625 MHz</b> FIXED MOBILE 5.226	<b>156.5625-156.7625 MHz</b> FIXED MOBILE	Maritime mobile applications (Port state control)  Fixed and mobile applications  Land mobile in areas remote from coast  Private Mobile Radio	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>156.7625-156.7875 MHz</b> MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	<b>156.7625-156.7875 MHz</b> MARITIME MOBILE Mobile-satellite (Earth-to-space)	Maritime applications	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>156.7875-156.8125 MHz</b> MARITIME MOBILE (distress and calling) 5.111 5.226	<b>156.7875-156.8125 MHz</b> MARITIME MOBILE (distress and calling)	Maritime applications International distress, urgency, safety and calling by radiotelephony at 156.8 MHz (VHF-CH16)  Search and rescue operations at 156.8 MHz	
<b>156.8125-156.8375 MHz</b> MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	<b>156.8125-156.8375 MHz</b> MARITIME MOBILE Mobile-satellite (Earth-to-space)	Maritime applications  In some countries this band is also used for Private Mobile Radio and/or Public Access Mobile Radio	
<b>156.8375-157.1875 MHz</b> FIXED MOBILE 5.226	<b>156.8375-157.1875 MHz</b> FIXED MOBILE	156.8375-157.45 MHz  Maritime mobile communications (ship stations). Paired with 156.025-156.350 MHz	ITU RR Articles 31 and 52  ITU RR Appendix 18

ITU Region 3	Vanuatu	Typical Applications	Additional information
		Paired with 161.5-162.0 MHz and single frequency applications; Land mobile in areas remote from coast Single frequency applications	
<b>157.1875-157.3375 MHz</b> FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	<b>157.1875-157.3375 MHz</b> FIXED MOBILE Maritime mobile-satellite		ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>157.3375-161.7875 MHz</b> FIXED MOBILE except aeronautical mobile 5.226	<b>157.3375-161.7875 MHz</b> FIXED MOBILE except aeronautical mobile	157.450-160.6 MHz Private Mobile Radio  160.600-160.975 MHz Maritime mobile communications (Coast stations).  Land mobile in areas remote from coast 160.975-161.475 MHz Private Mobile Radio	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>161.7875-161.9375 MHz</b> FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	<b>161.7875-161.9375 MHz</b> FIXED MOBILE Maritime mobile-satellite	Maritime applications  Private Mobile Radio	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>161.9375-161.9625 MHz</b> FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	<b>161.9375-161.9625 MHz</b> FIXED MOBILE Maritime mobile-satellite (Earth-to-space)	Maritime applications  Private Mobile Radio	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>161.9625-161.9875 MHz</b> MARITIME MOBILE	<b>161.9625-161.9875 MHz</b> MARITIME MOBILE	Maritime applications	ITU RR Articles 31 and 52

ITU Region 3	Vanuatu	Typical Applications	Additional information
Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226	Aeronautical mobile (OR) Mobile-satellite (Earth-to-space)	Private Mobile Radio	ITU RR Appendix 18
<b>161.9875-162.0125 MHz</b> FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA  5.226	<b>161.9875-162.0125 MHz</b> FIXED MOBILE Maritime mobile-satellite (Earth-to-space)	Maritime applications  Private Mobile Radio and/or Public Access	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>162.0125-162.0375 MHz</b> MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F  5.226	<b>162.0125-162.0375 MHz</b> MARITIME MOBILE Aeronautical mobile (OR) Mobile-satellite (Earth-to-space)	Fixed and mobile applications  Private Mobile Radio and/or Public Access	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>162.0375-174 MHz</b> FIXED MOBILE   5.226 5.230 5.231	<b>162.0375-174 MHz</b> FIXED MOBILE	VHF TV Band III (174-230 MHz)  SRD: Wireless (Radio) microphones (174 – 216 MHz) Private Mobile Radio and/or Public Access	ITU RR Articles 31 and 52  ITU RR Appendix 18
<b>174-223 MHz</b> FIXED MOBILE BROADCASTING 5.233 5.238 5.240 5.245	<b>174-223 MHz</b> FIXED MOBILE BROADCASTING	VHF TV Band III (174-230 MHz)  SRD: Wireless (Radio) Microphone	Recommendation ITU-R BT.1871 ETSI EN 300 422
<b>223-230 MHz</b> FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation	<b>223-230 MHz</b> FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation	Fixed and Mobile Applications  VHF TV Band III Wireless microphones	Recommendation ITU-R BT.1871

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.250			
<b>230-235 MHz</b> FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250	<b>230-235 MHz</b> FIXED MOBILE AERONAUTICAL RADIONAVIGATION	Fixed and Mobile Applications  In some countries, the band 230-238 MHz is used for TV broadcasting (TV Band III).	
<b>235-267 MHz</b> FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	<b>235-267 MHz</b> FIXED MOBILE	235 – 242.95 MHz Private Mobile Radio and/or Public Access Mobile Radio  242.95 – 243.05 MHz International Distress Frequency (243 MHz) 243.5 – 267 MHz Private Mobile Radio	Report ITU-R SM.2153
<b>267-272 MHz</b> FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	<b>267-272 MHz</b> FIXED MOBILE Space operation (space-to-Earth)	Fixed and Mobile applications	
<b>272-273 MHz</b> SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	<b>272-273 MHz</b> FIXED MOBILE	Fixed and Mobile applications	
<b>273-312 MHz</b> FIXED MOBILE 5.254	<b>273-312 MHz</b> FIXED MOBILE	Fixed and Mobile applications	
<b>312-315 MHz</b> FIXED MOBILE Mobile-satellite (Earth-to-space)	<b>312-315 MHz</b> FIXED MOBILE Mobile-satellite (Earth-to-space)	Mobile applications	

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.254 5.255			
<b>315-322 MHz</b> FIXED MOBILE 5.254	<b>315-322 MHz</b> FIXED MOBILE	Mobile applications	
<b>322-328.6 MHz</b> FIXED MOBILE RADIO ASTRONOMY 5.149	<b>322-328.6 MHz</b> FIXED MOBILE RADIO ASTRONOMY	Radio Astronomy (Observation of deuterium)	
<b>328.6-335.4 MHz</b> AERONAUTICAL RADIONAVIGATION 5.258 5.259	<b>328.6-335.4 MHz</b> AERONAUTICAL RADIONAVIGATION	Instrument Landing Systems (ILS) (glide path)	
<b>335.4-387 MHz</b> FIXED MOBILE 5.254	<b>335.4-387 MHz</b> FIXED MOBILE	336-346 MHz FWA  346.0-356.0 MHz Private Mobile Radio PTP/PTMP rural system; Paired with 356-366 MHz  356.0-366.0 MHz FWA  366.0-380.0 MHz Private Mobile Radio PTP/PTMP rural system; Paired with 336-346 MHz 380.0-387.0 MHz PPDR  Paired with 390.0-397.0 MHz To be used mainly for digital systems.  387.0-390.0 MHz FWA	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>387-390 MHz</b> FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	<b>387-390 MHz</b> FIXED MOBILE Mobile-satellite (space-to-Earth)	390.0-397.0 MHz PPDR  Private Mobile Radio Paired with 397.0-399.9 MHz To be used mainly for digital systems.	
<b>390-399.9 MHz</b> FIXED MOBILE  5.254	<b>390-399.9 MHz</b> FIXED MOBILE	397.0-399.9 MHz Private Mobile Radio Paired with 380.0-387.0 MHz To be used mainly for digital systems. Fixed applications	
<b>399.9-400.05 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	<b>399.9-400.05 MHz</b> MOBILE-SATELLITE (Earth-to-space)		
<b>400.05-400.15 MHz</b> STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	<b>400.05-400.15 MHz</b> STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)		ITU RR Article 26
<b>400.15-401 MHz</b> METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	<b>400.15-401 MHz</b> METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space operation (space-to-Earth)	Meteorological applications	
<b>401-402 MHz</b> METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	<b>401-402 MHz</b> METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	Meteorological applications Fixed and Mobile applications  SRD: Ultra-low power active medical implants (ULP-AMI)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>402-403 MHz</b> METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	<b>402-403 MHz</b> METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	Meteorological applications Fixed and Mobile applications SRD: Ultra low power active medical implants (ULP-AMI)	Report ITU-R SM.2153 ULP-AMI (402 – 405 MHz) Recommendation ITU-R RS.1346
<b>403-406 MHz</b> METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	<b>403-406 MHz</b> METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	SRD: Ultra low power active medical implants (ULP-AMI)	ULP-AMI (402 – 405 MHz) Recommendation ITU-R RS.1346 Report ITU-R SM.2153 ETSI EN 302 537 (405 – 406 MHz)
<b>406-406.1 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267		Low power satellite EPIRBs (distress and safety purposes)	
<b>406.1-410 MHz</b> FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	<b>406.1-410 MHz</b> FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	Private Mobile Radio and/or Public Access Mobile Radio PPDR Fixed applications	
<b>410-420 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	<b>410-420 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	Private Mobile Radio and/or Public Access Mobile Radio Fixed and Mobile applications Measurement and Remote-control equipment	
<b>420-430 MHz</b> FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	<b>420-430 MHz</b> FIXED MOBILE except aeronautical mobile Radiolocation	Private Mobile Radio and/or Public Access Mobile Radio PPDR Fixed applications	
<b>430-432 MHz</b>	<b>430-432 MHz</b>	Amateur Applications	

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIOLOCATION Amateur 5.278  5.271 5.276 5.279	RADIOLOCATION Amateur	PPDR	
<b>432-438 MHz</b> RADIOLOCATION Amateur 5.278 Earth exploration-satellite (active) 5.279A 5.271 5.276 5.279 5.281 5.282	<b>432-438 MHz</b> RADIOLOCATION Amateur Earth exploration-satellite (active)	Amateur Applications (432-438 MHz)  Amateur-satellite Applications (435-438 MHz)  Non-specific SRD applications (433.05-434.79 MHz)  ISM band (433.05-434.79 MHz) PPDR	Conditions for amateur satellite service is given in ITU RR 5.282
<b>438-440 MHz</b> RADIOLOCATION Amateur 5.278 5.271 5.276 5.279	<b>438-440 MHz</b> RADIOLOCATION Amateur	Amateur  PPDR  In some countries this band is used for Public Mobile Radio and Public access Mobile Radio and fixed applications	
<b>440-450 MHz</b> FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.285 5.270 5.271 5.284 5.286	<b>440-450 MHz</b> FIXED MOBILE except aeronautical mobile Radiolocation	Private Mobile Radio and/or Public Access Mobile Radio  PPDR  FIXED (telemetry, dual frequency alarm systems)  SRD : Private Mobile Radio (PMR/dPMR446(446.0-446.2 MHz))	Report ITU-R M.2474, ETSI EN 303 405 and ECC/DEC/(15)05
<b>450-455 MHz</b>	<b>450-455 MHz</b>	Fixed links (PTP)	Recommendation ITU-R M.1036

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286 <sup>a</sup> 5.286B 5.286C 5.286D 5.286E	FIXED MOBILE 5.209 5.286 5.286A 5.286B 5.286C	IMT (450-470 MHz)  Private Mobile Radio and/or Public Access Mobile Radio  PPDR	
<b>455-456 MHz</b> FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	<b>455-456 MHz</b> FIXED MOBILE	Fixed links (PTP)  IMT (450-470 MHz)  Private Mobile Radio and/or Public Access Mobile Radio  PPDR	Recommendation ITU-R M.1036
<b>456-459 MHz</b> FIXED MOBILE 5.286AA 5.287 5.288 5.271	<b>456-459 MHz</b> FIXED MOBILE	Fixed links (PTP)  IMT (450-470 MHz)  Private Mobile Radio and/or Public Access Mobile Radio  PPDR	Recommendation ITU-R M.1036
<b>459-460 MHz</b> FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	<b>459-460 MHz</b> FIXED MOBILE	Fixed links (PTP)  IMT (450-470 MHz)  Private Mobile Radio and/or Public Access Mobile Radio  PPDR	Recommendation ITU-R M.1036
<b>460-470 MHz</b> FIXED MOBILE 5.286AA 5.287 5.288 Meteorological-satellite (space-to-Earth) 5.290 5.289	<b>460-470 MHz</b> FIXED MOBILE Meteorological-satellite (space-to-Earth)	Fixed links (PTP)  IMT (450-470 MHz)  Private Mobile Radio and/or Public Access Mobile Radio  PPDR	Recommendation ITU-R M.1036

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>470-585 MHz</b> FIXED MOBILE 5.296A BROADCASTING 5.291 5.298</p>	<p><b>470-585 MHz</b> FIXED MOBILE BROADCASTING</p>	<p>DTT broadcasting (470-694 MHz) - Band IV/V terrestrial TV</p> <p>Services ancillary to broadcasting and program making (SAB/SAP)</p> <p>SRD: Wireless Audio Applications Radio Microphones</p>	<p>SAB/SAP: Report ITU-R BT.2338 and Report ITU-R BT.2344</p> <p>Wireless microphones, Recommendation ITU-R BT.1871 and ETSI EN 300 422</p>
<p><b>585-610 MHz</b> FIXED MOBILE 5.296A BROADCASTING RADIONAVIGATION</p> <p>5.149 5.305 5.306 5.307</p>	<p><b>470-610 MHz</b> FIXED MOBILE BROADCASTING RADIONAVIGATION</p>	<p>DTT broadcasting (470-694 MHz) Band IV/V terrestrial TV VLBI Observations (608 – 614 MHz)</p> <p>Services ancillary to broadcasting and program making (SAB/SAP)</p> <p>SRD: Wireless Audio Applications Radio Microphones</p>	<p>SAB/SAP: Report ITU-R BT.2338 and Report ITU-R BT.2344</p> <p>Wireless microphones, Recommendation ITU-R BT.1871 and ETSI EN 300 422</p>
<p><b>610-890 MHz</b> FIXED MOBILE 5.296A 5.313A 5.314A 5.317A BROADCASTING</p>	<p><b>610-890 MHz</b> FIXED MOBILE BROADCASTING</p>	<p>DTT broadcasting (470-694 MHz) Band IV/V terrestrial TV</p> <p>Services ancillary to broadcasting and program making (SAB/SAP)</p> <p>SRD: Wireless Audio Applications Radio Microphones RFID Applications (865-868 MHz) Measurement and Remote-control equipment</p>	<p>SAB/SAP: Report ITU-R BT.2338 and Report ITU-R BT.2344</p> <p>Wireless microphones, Recommendation ITU-R BT.1871 and ETSI EN 300 422</p> <p>Mobile applications in the 698-806 MHz range, use channel arrangement A5 of the Recommendation ITU-R M.1036</p> <p>Mobile applications in the 880 - 960 MHz range, use channel arrangement A2 of the Recommendation ITU-R M.1036</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.149 5.305 5.306 5.307 5.320		The band (863 – 870 MHz) is used for IoT applications	IoT: ETSI EN 300 220
<b>890-942 MHz</b> FIXED MOBILE except aeronautical mobile 5.314A 5.317A BROADCASTING Radiolocation. 5.323	<b>890-942 MHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING Radiolocation	902-915 MHz IMT  915-928 MHz IMT	Mobile applications in the 880 - 960 MHz range, use channel arrangement A2 of the Recommendation ITU-R M.1036
<b>942-960 MHz</b> FIXED MOBILE 5.314A 5.317A BROADCASTING 5.320	<b>942-960 MHz</b> FIXED MOBILE BROADCASTING	925-960 MHz IMT	Mobile applications in the 880 - 960 MHz range, use channel arrangement A2 of the Recommendation ITU-R M.1036
<b>960-1 164 MHz</b> AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328AA	<b>960-1 164 MHz</b> AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE (R)	Aeronautical radionavigation systems: Distance Measurement Equipment  1087.7-1092.3 MHz Automatic Dependent Surveillance-Broadcast (ADS-B)	Resolution 425 (Rev.WRC-19) (global flight tracking for civil aviation)
<b>1 164-1 215 MHz</b> AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	<b>1 164-1 215 MHz</b> AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	Galileo (1164-1214 MHz) GLONASS (1190.3-1213.8 MHz)  Aeronautical radionavigation systems: Distance Measurement Equipment Surveillance Radar	
<b>1 215-1 240 MHz</b> EARTH EXPLORATION-SATELLITE (active)	<b>1 215-1 240 MHz</b> EARTH EXPLORATION-SATELLITE (active)	GLONASS (1237.8-1253.8 MHz)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active)	GPS (1215.6-1239.6 MHz)	
<b>1 240-1 300 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.332A 5.335 5.335A	<b>1 240-1 300 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) Amateur	GLONASS (1237.8-1253.8 MHz)  Galileo (1260-1300 MHz)	
<b>1 300-1 350 MHz</b> RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	<b>1 300-1 350 MHz</b> AERONAUTICAL RADIONAVIGATION RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space)	Aeronautical radionavigation systems: Ground Base Radar	In making assignments to stations in the frequency band 1330-1350 MHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>1 350-1 400 MHz</b> RADIOLOCATION. 5.338A 5.149 5.334 5.339	<b>1 350-1 400 MHz</b> RADIOLOCATION		In making assignments to stations in the frequency band 1350-1375 MHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>1 400-1 427 MHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  5.340 5.341	<b>1 400-1 427 MHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Hydrogen line and continuum observations)	All emissions are prohibited in this band.
<b>1 427-1 429 MHz</b> SPACE OPERATION (Earth-to-space) FIXED	<b>1 427-1 429 MHz</b> SPACE OPERATION (Earth-to-space) FIXED	1 427-1 452 MHz Fixed links (duplex)	Recommendation ITU- R F 1242 Recommendation ITU-R F.701

ITU Region 3	Vanuatu	Typical Applications	Additional information
MOBILE except aeronautical mobile 5.341A 5.341B 5.341C 5.338A 5.341	MOBILE except aeronautical mobile	IMT	Recommendation ITU-R M.1036
<b>1 429-1 452 MHz</b> FIXED MOBILE 5.341B 5.341C 5.343 5.338A 5.341	<b>1 429-1 452 MHz</b> FIXED MOBILE except aeronautical mobile	IMT Fixed service applications	Recommendation ITU-R M.1036 Recommendation ITU- R F 1242 Recommendation ITU-R F.701
<b>1 452-1 492 MHz</b> FIXED MOBILE 5.341B 5.343 5.346A BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.344 5.345	<b>1 452-1 492 MHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE	1 452-1 492 MHz Terrestrial Digital Audio Broadcasting (T-DAB)  IMT	Recommendation ITU- R F. 1242 Recommendation ITU- R F. 701
<b>1 492-1 518 MHz</b> FIXED MOBILE 5.341C 5.341	<b>1 492-1 518 MHz</b> FIXED MOBILE	1 492-1 518 MHz Fixed links (dual frequency) Paired with 1350-1375 MHz  IMT	Recommendation ITU- R F 1242 Recommendation ITU-R F.701  Recommendation ITU-R M.1036
<b>1 518-1 525 MHz</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	<b>1 518-1 525 MHz</b> FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth)	1518-1525 MHz Fixed links (single frequency)  Mobile satellite systems	Recommendation ITU- R F 1242 Recommendation ITU-R F.701
<b>1 525-1 530 MHz</b> SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349	<b>1 525-1 530 MHz</b> SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite Mobile	Fixed links  Mobile satellite systems  This band also carries Maritime safety Information (MSI) for vessels in Navigation Area	Recommendation ITU- R F 1242 Recommendation ITU-R F.701

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p>5.341 5.351 5.352A 5.354</p> <p><b>1 530-1 535 MHz</b>                      SPACE OPERATION (space-to-Earth)                      MOBILE-SATELLITE (space-to-Earth) 5.208B                      5.351A 5.353A                      Earth exploration-satellite                      Fixed                      Mobile 5.343</p> <p>5.341 5.351 5.354</p>	<p><b>1 530-1 535 MHz</b>                      SPACE OPERATION (space-to-Earth)                      MOBILE-SATELLITE (space-to-Earth)                      Earth exploration-satellite                      Fixed                      Mobile</p>	<p>1 530–1 544 MHz                      GMDSS (SAT-COM)</p> <p>Mobile satellite systems</p> <p>Fixed applications</p> <p>This band also carries Maritime safety Information (MSI) for vessels in Navigation Area</p> <p>In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS)</p>	<p>Resolution 222 (Rev.WRC 12)                      Recommendation ITU- R F 1242                      Recommendation ITU-R F.701</p>
<p><b>1 535-1 559 MHz</b>                      MOBILE-SATELLITE (space-to-Earth) 5.208B                      5.351A</p> <p>5.341 5.351 5.353A 5.354 5.355 5.356                      5.357 5.357A 5.359 5.362A</p>	<p><b>1 535-1 559 MHz</b>                      MOBILE-SATELLITE (space-to-Earth)</p>	<p>Mobile satellite systems</p> <p>GMDSS (SAT-COM) in 1 530–1 544 MHz / (D&amp;S-OPS) in 1544–1545 MHz</p> <p>In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS);</p> <p>This band also carries Maritime safety Information (MSI) for vessels in Navigation Area</p>	<p>Resolution 222 (Rev.WRC 12)</p>
<p><b>1 559-1 610 MHz</b>                      AERONAUTICAL RADIONAVIGATION</p>	<p><b>1 559-1 610 MHz</b>                      AERONAUTICAL RADIONAVIGATION</p>	<p>Galileo (1559.42-1591.42 MHz)</p> <p>GLONASS (1592.9-1610.5 MHz)</p>	

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	GPS (1563.42-1587.42 MHz)	
<b>1 610-1 610.6 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.369 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.372	<b>1 610-1 610.6 MHz</b> MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)	GLONASS (1592.9-1610.5 MHz)  This band is designated world-wide for the MSS. Paired with 2483.5-2484.1 MHz for some systems.	
<b>1 610.6-1 613.8 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space). 5.369 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.372	<b>1 610.6-1 613.8 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)	Radio Astronomy (Observation of OH radical and molecules) This band is designated world-wide for the MSS.  Paired with 1593-1594 MHz for aeronautical public correspondence	
<b>1 613.8-1 621.35 MHz</b> MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite (Earth-to-space). 54.369   5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.372 5.372A	<b>1 613.8-1 621.35 MHz</b> MOBILE-SATELLITE (Earth to space) AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space)	Mobile satellite systems	

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<p><b>1621.35-1626.5 MHz</b>                      MARITIME MOBILE-SATELLITE (space-to-Earth)                      5.373 5.373A                      MOBILE-SATELLITE (Earth to space) 5.351A                      AERONAUTICAL RADIONAVIGATION                      Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth)                      Radiodetermination-satellite (Earth to space)                      5.369                      5.208B 5.341 5.355 5.359 5.364 5.365 5.366                      5.367 5.368 5.372</p>	<p><b>1621.35-1626.5 MHz</b>                      MARITIME MOBILE-SATELLITE (space-to-Earth)                      MOBILE-SATELLITE (Earth to space)                      AERONAUTICAL RADIONAVIGATION                      Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth)                      Radiodetermination-satellite (Earth to space)</p>	<p>Used for distress and safety purposes in the Earth-to-space and space-to-Earth directions in the maritime mobile-satellite service</p> <p>Mobile satellite systems</p> <p>Paired with 1593-1594 MHz for aeronautical public correspondence</p>	
<p><b>1 626.5-1 660 MHz</b>                      MOBILE-SATELLITE (Earth-to-space) 5.351A</p> <p>5.341 5.351 5.353A 5.354 5.355 5.357A                      5.359 5.362A 5.374                      5.375 5.376</p>	<p><b>1 626.5-1 660 MHz</b>                      MOBILE-SATELLITE (Earth-to-space)</p>	<p>GMDSS (SAT-COM) in 1626.5 – 1645.5 MHz</p> <p>In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS);</p> <p>GMDSS (D&amp;S-OPS) in 1645.5-1646.5 MHz</p> <p>Mobile satellite systems</p>	<p>Resolution 222 (Rev.WRC 12) applies</p>
<p><b>1 660-1 660.5 MHz</b>                      MOBILE-SATELLITE (Earth-to-space) 5.351A                      RADIO ASTRONOMY</p> <p>5.149 5.341 5.351 5.354 5.362A 5.376A</p>	<p><b>1 660-1 660.5 MHz</b>                      MOBILE-SATELLITE (Earth-to-space)                      RADIO ASTRONOMY</p>	<p>Radio Astronomy (Observation of OH radical and molecules)</p>	<p>Recommendation ITU-R F.701</p>
<p><b>1 660.5-1 668 MHz</b>                      RADIO ASTRONOMY                      SPACE RESEARCH (passive)                      Fixed                      Mobile except aeronautical mobile                      5.149 5.341 5.379 5.379A</p>	<p><b>1 660.5-1 668 MHz</b>                      RADIO ASTRONOMY                      SPACE RESEARCH (passive)                      Fixed                      Mobile except aeronautical mobile</p>	<p>Fixed Applications</p> <p>Radio Astronomy (Observation of OH radical and molecules)</p>	<p>Recommendation ITU-R F.701</p>

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<p><b>1 668-1 668.4 MHz</b>                      MOBILE-SATELLITE (Earth-to-space) 5.351A                      5.379B 5.379C                      RADIO ASTRONOMY                      SPACE RESEARCH (passive)                      Fixed                      Mobile except aeronautical mobile</p> <p>5.149 5.341 5.379 5.379A</p>	<p><b>1 668-1 668.4 MHz</b>                      MOBILE-SATELLITE (Earth-to-space)                      RADIO ASTRONOMY                      SPACE RESEARCH (passive)                      Fixed                      Mobile except aeronautical mobile</p>	<p>Radio Astronomy (Observation of OH radical and molecules)</p>	<p>Recommendation ITU-R F.701</p>
<p><b>1 668.4-1 670 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      MOBILE except aeronautical mobile                      MOBILE-SATELLITE (Earth-to-space) 5.351A                      5.379B 5.379C                      RADIO ASTRONOMY</p> <p>5.149 5.341 5.379D 5.379E</p>	<p><b>1 668.4-1 670 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      MOBILE except aeronautical mobile                      MOBILE-SATELLITE (Earth-to-space)                      RADIO ASTRONOMY</p>	<p>Radio Astronomy (Observation of OH radical and molecules)</p>	<p>Recommendation ITU-R F.701</p>
<p><b>1 670-1 675 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      METEOROLOGICAL-SATELLITE (space-to-Earth)                      MOBILE                      MOBILE-SATELLITE (Earth-to-space) 5.351A                      5.379B</p> <p>5.341 5.379D 5.379E 5.380A</p>	<p><b>1 670-1 675 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      METEOROLOGICAL-SATELLITE (space-to-Earth)                      MOBILE                      MOBILE-SATELLITE (Earth-to-space)</p>	<p>Fixed Applications</p>	<p>Recommendation ITU-R F.701</p>
<p><b>1 675-1 690 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      METEOROLOGICAL-SATELLITE (space-to-Earth)                      MOBILE except aeronautical mobile</p> <p>5.341</p>	<p><b>1 675-1 690 MHz</b>                      METEOROLOGICAL AIDS                      FIXED                      METEOROLOGICAL-SATELLITE (space-to-Earth)                      MOBILE except aeronautical mobile</p>		<p>Recommendation ITU-R F.701</p>
<p><b>1 690-1 700 MHz</b></p>	<p><b>1 690-1 700 MHz</b></p>	<p>Fixed links (single frequency)</p>	<p>Recommendation ITU-R F.701</p>

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METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth)  5.289 5.341 5.381	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth)		
<b>1 700-1 710 MHz</b> FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile  5.289 5.341 5.384	<b>1 700-1 710 MHz</b> FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	1 710-1 785 MHz IMT	Recommendation ITU-R F.701  Recommendation ITU-R M.1036
<b>1 710-1 930 MHz</b> FIXED MOBILE 5.384A 5.388. 5.388A 5.149 5.341 5.385 5.386 5.387	<b>1 710-1 930 MHz</b> FIXED MOBILE	1785-1805 MHz Broadband FWA applications  Paired with 1805-1880 MHz. IMT  1 880-1 920 MHz FWA  1 920-1 980 MHz IMT (terrestrial)	Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098  In making assignments to stations in the frequency band 1718.8-1722.2 MHz, consideration will be given to Radio Astronomy applications as per RR N° 5.149  Mobile applications in the 1710 - 1880 MHz range, use channel arrangement B4 of the Recommendation ITU-R M.1036
<b>1 930-1 970 MHz</b> FIXED MOBILE 5.388 5.388A	<b>1 930-1 970 MHz</b> FIXED MOBILE	IMT	Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098  Mobile applications in the 1920 - 1980 MHz and 2110 – 2170 MHz ranges, use channel arrangement B4 of the Recommendation ITU-R M.1036

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>1 970-1 980 MHz</b> FIXED MOBILE 5.388 5.388A	<b>1 970-1 980 MHz</b> FIXED MOBILE	IMT (terrestrial and satellite) (1980-2010 MHz) Fixed Applications	Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098
<b>1 980-2 010 MHz</b> FIXED MOBILE. 5.388 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.389A 5.389B 5.389F	<b>1 980-2 010 MHz</b> FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)	IMT terrestrial (2010-2025 MHz) Fixed Applications	
<b>2 010-2 025 MHz</b> FIXED MOBILE 5.388 5.388A	<b>2 010-2 025 MHz</b> FIXED MOBILE	Fixed links Electronic News Gathering Applications Frequency range 2025-2110 MHz paired with 2200-2285 MHz  Earth exploration satellite applications	Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098
<b>2 025-2 110 MHz</b> SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space)  5.392	<b>2 025-2 110 MHz</b> SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space)		Recommendation. ITU-R F.1098.  Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098
<b>2 110-2 120 MHz</b> FIXED MOBILE 5.388 5.388A SPACE RESEARCH (deep space) (Earth-to-space)	<b>2 110-2 120 MHz</b> MOBILE SPACE RESEARCH (deep space) (Earth-to-space)	IMT (terrestrial) (2110-2170 MHz)	Mobile applications in the 1920 - 1980 MHz and 2110 – 2170 MHz ranges, use channel arrangement B4 of the Recommendation ITU-R M.1036
<b>2 120-2 160 MHz</b> FIXED MOBILE 5.388A	<b>2 120-2 160 MHz</b> MOBILE	IMT (terrestrial) (2110-2170 MHz)	Mobile applications in the 1920 - 1980 MHz and 2110 – 2170 MHz ranges, use channel

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5.388			arrangement B4 of the Recommendation ITU-R M.1036
<b>2 160-2 170 MHz</b> FIXED MOBILE 5.388. 5.388A	<b>2 160-2 170 MHz</b> MOBILE	IMT (terrestrial) (2110-2170 MHz)	Mobile applications in the 1920 - 1980 MHz and 2110 – 2170 MHz ranges, use channel arrangement B4 of the Recommendation ITU-R M.1036
<b>2 170-2 200 MHz</b> FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A 5.389A 5.389F	<b>2 170-2 200 MHz</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)	IMT (satellite) (2170-2200 MHz) Paired with 1980-2010 MHz  Fixed Applications	The development of satellites for IMT services to be monitored. Mobile applications in the 1920 - 1980 MHz and 2110 – 2170 MHz ranges, use channel arrangement B4 of the Recommendation ITU-R M.1036  Recommendation ITU-R F.701 Recommendation ITU-R F.382 Recommendation ITU-R F.1098
<b>2 200-2 290 MHz</b> SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	<b>2 200-2 290 MHz</b> SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space)	Fixed links (2025-2110 MHz paired with 2200-2285 MHz)  Earth exploration satellite applications  Broadband FWA (2 285-2 300 MHz)	Recommendation ITU-R F.1098.
<b>2 290-2 300 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	<b>2 290-2 300 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	FWA (2 285-2 300 MHz)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p><b>2 300-2 450 MHz</b>                      FIXED                      MOBILE 5.384A                      RADIOLOCATION                      Amateur                      5.150 5.282 5.393 5.394</p>	<p><b>2 300-2 450 MHz</b>                      FIXED                      MOBILE                      RADIOLOCATION                      Amateur</p>	<p>2 300-2 400 MHz                      Fixed links PTP/PTMP paired with 2 400-2 500 MHz.                       ISM band (2 400-2 500 MHz) centre frequency 2450 MHz                      Wireless LANs (2400-2483.5 MHz)                       IMT (TDD)</p>	<p>Recommendation ITU-R M.1036                      Recommendation ITU-R F.701                      Recommendation ITU-R F.746                      Recommendation ITU-R F.1243                      Recommendation ITU-R SM.1896                       Report ITU-R SM.2153</p>
<p><b>2 450-2 483.5 MHz</b>                      FIXED                      MOBILE                      RADIOLOCATION                      5.150</p>	<p><b>2 450-2 483.5 MHz</b>                      FIXED                      MOBILE                      RADIOLOCATION</p>	<p>2400-2500 MHz                      Fixed links PTP/PTMP                       Wireless LANs (2400-2483.5 MHz)                       SRD:                      Measurement and Remote-control equipment                      Radio frequency identification                      Radio determination applications</p>	<p>Recommendation ITU-R F.701                      Recommendation ITU-R F.746                      Recommendation ITU-R F.1243</p>
<p><b>2 483.5-2 500 MHz</b>                      FIXED                      MOBILE                      MOBILE-SATELLITE (space-to-Earth) 5.351A                      RADIODETERMINATION SATELLITE (space-to-Earth) 5.398                      RADIOLOCATION                       5.150 5.368 5.372A 5.401 5.402</p>	<p><b>2 483.5-2 500 MHz</b>                      FIXED                      MOBILE                      MOBILE-SATELLITE (space-to-Earth)                      RADIODETERMINATION SATELLITE (space-to-Earth)                      Radiolocation</p>		<p>Recommendation ITU-R F.701                      Recommendation ITU-R F.746                      Recommendation ITU-R F.1243</p>
<p><b>2 500-2 520 MHz</b>                      FIXED 5.410                      FIXED-SATELLITE (space-to-Earth) 5.415                      MOBILE except aeronautical mobile 5.384A 5.409A</p>	<p><b>2 500-2 520 MHz</b>                      FIXED                      FIXED-SATELLITE (space-to-Earth)                      MOBILE except aeronautical mobile                      MOBILE-SATELLITE (space-to-Earth)</p>	<p>FWA (2500-2690 MHz)                       IMT (2500-2690 MHz)</p>	<p>Recommendation ITU-R M.1036</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p>MOBILE-SATELLITE (space-to-Earth) 5.351A 5.407 5.414 5.414A</p> <p>5.404</p>			
<p><b>2 520-2 535 MHz</b> FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A 5.409A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.414A 5.415A</p>	<p><b>2 520-2 535 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE</p>	<p>IMT (2500-2690 MHz)  BFWA (2500-2690 MHz)</p>	<p>Recommendation ITU-R F.701 Recommendation ITU-R F.1243  Recommendation ITU-R M.1036</p>
<p><b>2 535-2 655 MHz</b> FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A BROADCASTING-SATELLITE 5.413 5.416</p> <p>5.339 5.418 5.418A 5.418B 5.418C</p>	<p><b>2 535-2 655 MHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE</p>	<p>IMT (2500-2690 MHz)  FWA (2500-2690 MHz)</p>	<p>Recommendation ITU-R F.701 Recommendation ITU-R F.1243  Recommendation ITU-R M.1036</p>
<p><b>2 655-2 670 MHz</b> FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A 5.409A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)</p> <p>5.149 5.420</p>	<p><b>2 655-2 670 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile BROADCASTING-SATELLITE Earth exploration-satellite (passive) Radio astronomy Space research (passive)</p>	<p>IMT (2500-2690 MHz)  BFWA (2500-2690 MHz)  Radio Astronomy (Continuum measurements and galactic studies) (2655 – 2690 MHz)</p>	<p>Recommendation ITU-R F.701 Recommendation ITU-R F.1243  Recommendation ITU-R M.1036</p>
<p><b>2 670-2 690 MHz</b> FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A 5.409A MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419</p>	<p><b>2 670-2 690 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile MOBILE-SATELLITE</p>	<p>IMT (2500-2690 MHz)  BFWA (2500-2690 MHz)  Radio Astronomy (Continuum measurements and galactic studies) (2655 – 2690 MHz)</p>	<p>Recommendation ITU-R F.701 Recommendation ITU-R F.1243  Recommendation ITU-R M.1036</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	(Earth-to-space) Earth exploration-satellite (passive) Radio astronomy Space research (passive)		
<b>2 690-2 700 MHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	<b>2 690-2 700 MHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Continuum measurements and galactic studies)	
<b>2 700-2 900 MHz</b> AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	<b>2 700-2 900 MHz</b> AERONAUTICAL RADIONAVIGATION Radiolocation	Aeronautical radionavigation radars: PSR (primary surveillance radar) Meteorological radar	
<b>2 900-3 100 MHz</b> RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	<b>2 900-3 100 MHz</b> RADIOLOCATION RADIONAVIGATION		
<b>3 100-3 300 MHz</b> RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	<b>3 100-3 300 MHz</b> RADIOLOCATION Earth exploration-satellite (active) Space research (active)	IMT	In making assignments to stations in the frequency band 3100-3300 MHz, consideration will be given to Radio Astronomy applications as per RR N° 5.149  Recommendation ITU-R M.1036
<b>3 300-3 400 MHz</b> RADIOLOCATION Amateur 5.149 5.429 5.429E 5.429F	<b>3 300-3 400 MHz</b> RADIOLOCATION Amateur	BFWA  IMT (3300-3600 MHz)	Recommendation ITU-R M.1036 Report ITU-R M.2481  In making assignments to stations in the frequency band 3300-3400 MHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>3 400-3 500 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth)	<b>3 400-3 500 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth)	IMT (3300-3600 MHz)	Recommendation ITU-R M.1036

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Amateur Mobile 5.432 5.432B Radiolocation 5.433 5.282 5.432A	Amateur Mobile Radiolocation	Broadband FWA in the range 3600-3800MHz	
<b>3 500-3 600 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	<b>3 500-3 600 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation	IMT (3300-3600 MHz)  Broadband FWA in the range 3600-3800MHz	Recommendation ITU-R M.1036
<b>3 600-3 700 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation. 5.435	<b>3 600-3 700 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation	VSAT and other earth stations operating in the FSS.  Some administrations using the frequency band 3600 - 3800 MHz for IMT	Recommendation ITU-R F.635 Recommendation ITU-R F.1488 Recommendation ITU-R F.635  Recommendation ITU-R M.1036
<b>3 700-4 200 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile. 5.435B	<b>3 700-4 200 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	VSAT and other earth stations operating in the FSS.  Some administrations using the frequency band 3600 - 3800 MHz for IMT	Recommendation ITU-R F.635 Recommendation ITU-R F.1488 Recommendation ITU-R F.635  Recommendation ITU-R M.1036
<b>4 200-4 400 MHz</b> AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440	<b>4 200-4 400 MHz</b> AERONAUTICAL MOBILE (R) AERONAUTICAL RADIONAVIGATION	Radio altimeters on board aircraft	
<b>4 400-4 500 MHz</b> FIXED MOBILE 5.440A	<b>4 400-4 500 MHz</b> FIXED MOBILE	Fixed links  SRD: Reservoir Level Probing Radar (RLPR)	Recommendation ITU-R F.1099
<b>4 500-4 800 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	<b>4 500-4 800 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	Ultra-wideband applications (UWB)	The band 4 500-4 800 MHz is part of the APP30B Plan (FSS space-to-Earth).  Recommendation ITU-R F.1099

ITU Region 3	Vanuatu	Typical Applications	Additional information
			Ultra-wideband applications (UWB): Recommendation ITU-R SM.1896 Recommendation ITU-R SM.1755 Report ITU-R SM.2153
<b>4 800-4 990 MHz</b> FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.443  5.149 5.339	<b>4 800-4 990 MHz</b> FIXED MOBILE Radio Astronomy	IMT Fixed links  Radio Astronomy (Observations of formaldehyde (H2CO) interstellar clouds)	Recommendation ITU-R M.1036
<b>4 990-5 000 MHz</b> FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	<b>4 990-5 000 MHz</b> FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive)		Recommendation ITU-R F.1099
<b>5 000-5 010 MHz</b> AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	<b>5 000-5 010 MHz</b> AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)		
<b>5 010-5 030 MHz</b> AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	<b>5 010-5 030 MHz</b> AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	Microwave Landing systems.	
<b>5 030-5 091 MHz</b> AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	<b>5 030-5 091 MHz</b> AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION		
<b>5 091-5 150 MHz</b> FIXED SATELLITE (Earth-to-Space) 5.444A	<b>5 091-5 150 MHz</b> FIXED SATELLITE (Earth-to-Space)		

ITU Region 3	Vanuatu	Typical Applications	Additional information
AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	AERONAUTICAL MOBILE AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION		
<b>5 150-5 250 MHz</b> 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	<b>5 150-5 250 MHz</b> FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile AERONAUTICAL RADIONAVIGATION	Wireless Access Systems (WAS)/RLAN	Resolution 229 (rev. WRC-19)
<b>5 250-5 255 MHz</b> EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A	<b>5 250-5 255 MHz</b> EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile RADIOLOCATION SPACE RESEARCH	Wireless Access Systems (WAS)/RLAN	Resolution 229 (rev. WRC-19)
<b>5 255-5 350 MHz</b> EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active)  5.447E 5.448 5.448A	<b>5 255-5 350 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile	Ground based and airborne weather Radar	Resolution 229 (rev. WRC-19)
<b>5 350-5 460 MHz</b> EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	<b>5 350-5 460 MHz</b> EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) AERONAUTICAL RADIONAVIGATION RADIOLOCATION		
<b>5 460-5 470 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION 5.448D	<b>5 460-5 470 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION	Wireless Access Systems (WAS)/RLAN	

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448B	RADIONAVIGATION SPACE RESEARCH (active)		
<b>5 470-5 570 MHz</b> EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B MARITIME RADIONAVIGATION SPACE RESEARCH (active) 5.448B 5.450 5.451	<b>5 470-5 570 MHz</b> EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile RADIOLOCATION MARITIME RADIONAVIGATION SPACE RESEARCH (active)	Wireless Access Systems (WAS)/RLAN	Resolution 229 (rev. WRC-19)
<b>5 570-5 650 MHz</b> MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	<b>5 570-5 650 MHz</b> MARITIME RADIONAVIGATION MOBILE except aeronautical mobile RADIOLOCATION	Ground-based meteorological radars (5600-5650 MHz)  Wireless Access Systems (WAS)/RLAN	Resolution 229 (rev. WRC-19)
<b>5 650-5 725 MHz</b> RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.454  5.282 5.451 5.453 5.455	<b>5 650-5 725 MHz</b> RADIOLOCATION MOBILE except aeronautical mobile Amateur Space Research (deep space)	FWA (5725-5850 MHz)  SRD applications: Reservoir Level Probing Radar (RLPR) RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) Transport and information control systems (ITS) 5 805-5 815 MHz)	Resolution 229 (rev. WRC-19)
<b>5 725-5 830 MHz</b> RADIOLOCATION Amateur 5.150 5.453 5.455	<b>5 725-5 830 MHz</b> RADIOLOCATION Amateur	SRD: Reservoir Level Probing Radar (RLPR)	Recommendation ITU-R SM.1896 Recommendation ITU-R M.1453  Report ITU-R SM.2153
<b>5 830-5 850 MHz</b> RADIOLOCATION Amateur	<b>5 830-5 850 MHz</b> RADIOLOCATION Amateur	ISM (5725-5875 MHz)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153

ITU Region 3	Vanuatu	Typical Applications	Additional information
Amateur-satellite (space-to-Earth) 5.150 5.453 5.455	Amateur-satellite (space-to-Earth)		
<b>5 850-5 925 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 5.150	<b>5 850-5 925 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation	FIXED links (5850-5925 MHz) ISM (5725-5875 MHz)  SRD: Reservoir Level Probing Radar (RLPR)	Recommendation ITU-R SM.1896 Report ITU-R SM.2153
<b>5 925-6 700 MHz</b> FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.457D 5.457E 5.457F 5.149 5.440 5.458	<b>5 925-6 700 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz)  Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) Earth Station onboard vessels (ESV).  UWB SRD application (6000 - 9000 MHz)  Wireless Access Systems (WAS)/RLAN	Recommendation ITU-R F.383 Recommendation ITU-R F.384  Ultra-wideband applications (UWB): Recommendation ITU-R SM.1755 Recommendation ITU-R SM.1756 Recommendation ITU-R SM.1757 Report ITU-R SM.2153  In making assignments to stations in the frequency band 6650 – 6675.2 MHz, consideration will be given Radio Astronomy applications as per RR N° 5.149
<b>6 700-7 075 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.457D 5.457E 5.457F 5.458 5.458A 5.458B	<b>6 700-7 075 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) MOBILE	Fixed links – Upper 6 GHz (6425-7110 MHz)  Wireless Access Systems (WAS)/RLAN	Recommendation ITU-R F.384  The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space);

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>7 075-7 145 MHz</b> FIXED MOBILE 5.457E 5.457F 5.458 5.459	<b>7 075-7 145 MHz</b> FIXED MOBILE	Fixed links – Upper 6 GHz (6425-7110 MHz) and Lower 7 GHz (7110-7425 MHz)  Wireless Access Systems (WAS)/RLAN	Recommendation ITU-R F.384  Recommendation ITU-R F.385
<b>7 145-7190 MHz</b> FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	<b>7 145-7190 MHz</b> FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space)	Fixed links – Lower 7 GHz (7110-7425 MHz)	Recommendation ITU-R F.385
<b>7 190- 7 235 MHz</b> EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	<b>7 190- 7 235 MHz</b> EARTH EXPLORATION SATELLITE (Earth-to-Space) FIXED MOBILE SPACE RESEARCH (Earth-to-space)	Fixed links – Lower 7 GHz (7110-7425 MHz)	Recommendation ITU-R F.385
<b>7 235-7 250 MHz</b> EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A FIXED MOBILE 5.458	<b>7 235-7 250 MHz</b> EARTH EXPLORATION SATELLITE (Earth-to-Space) FIXED MOBILE	Fixed links – Lower 7 GHz (7110-7425 MHz)	Recommendation ITU-R F.385
<b>7 250-7 300 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	<b>7 250-7 300 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	Fixed links – Lower 7 GHz (7110-7425 MHz)	Recommendation ITU-R F.385
<b>7 300-7 375 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	<b>7 300-7 375 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed links – Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	Recommendation ITU-R F.385

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>7 375-7 450 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	<b>7 375-7 450 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth)	Fixed links – Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	Recommendation ITU-R F.385
<b>7 450-7 550 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) 5.461A 5.461AA 5.461AB 5.461AC	<b>7 450-7 550 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth)	Fixed links – Upper 7 GHz (7425-7750 MHz)	Recommendation ITU-R F.385
<b>7 550-7 750 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	<b>7 550-7 750 MHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth)	Fixed links – Upper 7 GHz (7425-7750 MHz)	Recommendation ITU-R F.385
<b>7 750-7 900 MHz</b> FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	<b>7 750-7 900 MHz</b> FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed links – Lower 8 GHz (7725-8275 MHz)	Recommendation ITU-R F.386
<b>7 900-8 025 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	<b>7 900-8 025 MHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	Fixed links – Lower 8 GHz (7725-8275 MHz)	Recommendation ITU-R F.386 Recommendation ITU-R. F.385
<b>8 025-8 175 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED	<b>8 025-8 175 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED	Fixed links – Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	Recommendation ITU-R F.386

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED-SATELLITE (Earth-to-space) MOBILE 5.463  5.462A	FIXED-SATELLITE (Earth-to-space) MOBILE		
<b>8 175-8 215 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	<b>8 175-8 215 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE	Fixed links – Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	Recommendation ITU-R F.386
<b>8 215-8 400 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	<b>8 215-8 400 MHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	Fixed links – Lower 8 GHz (7725-8275 MHz) and Upper 8 GHz (8275-8500 MHz)	Recommendation ITU-R F.386
<b>8 400-8 500 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466	<b>8 400-8 500 MHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth)	Fixed links – Upper 8 GHz (8275-8500 MHz)	Recommendation ITU-R F.386
<b>8 500-8 550 MHz</b> RADIOLOCATION 5.468 5.469	<b>8 500-8 550 MHz</b> RADIOLOCATION	RADARS e.g. precision airfield approach radars.	
<b>8 550-8 650 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	<b>8 550-8 650 MHz</b> EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	RADARS e.g. precision airfield approach radars	
<b>8 650-8 750 MHz</b> RADIOLOCATION 5.468 5.469	<b>8 650-8 750 MHz</b> RADIOLOCATION	RADARS e.g. precision airfield approach radars	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>8 750-8 850 MHz</b> RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	<b>8 750-8 850 MHz</b> RADIOLOCATION AERONAUTICAL RADIONAVIGATION	RADARS e.g. precision airfield approach radars	
<b>8 850-9 000 MHz</b> RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	<b>8 850-9 000 MHz</b> RADIOLOCATION MARITIME RADIONAVIGATION	RADARS e.g. precision airfield approach radars	
<b>9 000-9 200 MHz</b> AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471 5.473A	<b>9 000-9 200 MHz</b> AERONAUTICAL RADIONAVIGATION RADIOLOCATION	RADARS e.g. precision airfield approach radars	
<b>9 200-9 300 MHz</b> EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	<b>9 200-9 300 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION MARITIME RADIONAVIGATION	RADARS e.g. precision airfield approach radars	
<b>9 300-9 500 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION 5.475 SPACE RESEARCH (active) 5.427 5.474 5.475A 5.475B 5.476A	<b>9 300-9 500 MHz</b> RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION	RADARS e.g. precision airfield approach radars	
<b>9 500-9 800 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	<b>9 500-9 800 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active)	RADARS e.g. precision airfield approach radars	
<b>9 800-9 900 MHz</b> RADIOLOCATION	<b>9 800-9 900 MHz</b> RADIOLOCATION	RADARS e.g. precision airfield approach radars	

ITU Region 3	Vanuatu	Typical Applications	Additional information
Earth exploration-satellite (active) Fixed 5.477 Space research (active) 5.478 5.478A 5.478B	Earth exploration-satellite (active) Space research (active) Fixed		
<b>9 900-10 000 MHz</b> EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed 5.477  5.474D 5.478 5.479	<b>9 900-10 000 MHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION Fixed	Fixed Links	
<b>10-10.4 GHz</b> EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur  5.474D 5.479	<b>10-10.4 GHz</b> EARTH EXPLORATION SATELLITE (active) FIXED MOBILE RADIOLOCATION Amateur	FWA – 10.5 GHz (10.15-10.30 GHz)	
<b>10.4-10.45 GHz</b> FIXED MOBILE RADIOLOCATION Amateur	<b>10.4-10.45 GHz</b> FIXED MOBILE RADIOLOCATION Amateur	SAR Radars	Recommendation ITU-R F.1568
<b>10.45-10.5 GHz</b> RADIOLOCATION Amateur Amateur-satellite  5.481	<b>10.45-10.5 GHz</b> RADIOLOCATION Amateur Amateur-Satellite	FWA – 10.5 GHz (10.50-10.65 GHz)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>10.5-10.55 GHz</b> FIXED MOBILE RADIOLOCATION	<b>10.5-10.55 GHz</b> FIXED MOBILE RADIOLOCATION	FWA – 10.5 GHz (10.50-10.65 GHz) Paired with 10.15-10.30 GHz	Recommendation ITU-R F.1568
<b>10.55-10.6 GHz</b> FIXED MOBILE except aeronautical mobile Radiolocation	<b>10.55-10.6 GHz</b> FIXED MOBILE except aeronautical mobile Radiolocation	FWA – 10.5 GHz (10.50-10.65 GHz) Paired with 10.15-10.30 GHz  Radio Astronomy (Non-thermal synchrotron and enigmatic quasars)	Recommendation ITU-R F.1568
<b>10.6-10.68 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	<b>10.6-10.68 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation	FWA – 10.5 GHz (10.50-10.65 GHz)  Radio Astronomy (Non-thermal synchrotron and enigmatic quasars)	Recommendation ITU-R F.1568  Resolution 751 (WRC-19For sharing between EESS (passive) and the fixed and mobile service).
<b>10.68-10.7 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	<b>10.68-10.7 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Non-thermal synchrotron and enigmatic quasars)	
<b>10.7 – 10.95 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile	<b>10.7 – 10.95 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	DTH Applications under the FSS  Fixed Links	Recommendation ITU-R F.387
<b>10.95-11.2 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile	<b>10.95-11.2 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	DTH Applications under the FSS  Fixed Links	Recommendation ITU-R F.387

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>11.2-11.45 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile	<b>11.2-11.45 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	DTH Applications under the FSS  Fixed links	Recommendation ITU-R F.387
<b>11.45-11.7 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile	<b>11.45-11.7 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed links – 11 GHz (10.7-11.7 GHz)  Fixed-satellite downlinks (PTP/VSAT/SNG)  DTH Applications under the FSS	Recommendation ITU-R F.387
<b>11.7-12.2 GHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	<b>11.7-12.23 GHz</b> FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE	Fixed Links  Broadcasting satellite systems	ITU RR Appendix 30
<b>12.2-12.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A. 5.484B MOBILE except aeronautical mobile BROADCASTING  5.487	<b>12.2-12.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING	Fixed Links  Broadcasting satellite systems	ITU RR Appendix 30
<b>12.5-12.75 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493	<b>12.5-12.75 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE	FSS uplinks (VSAT/SNG) (12.5-12.75 GHz)  Aeronautical Earth Stations/ESV/ESIM Applications  NGSO FSS  Fixed links	

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>12.75-13.25 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.441 5.496A MOBILE Space research (deep space) (space-to-Earth)	<b>12.75-13.25 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space research (deep space) (space-to-Earth)	Fixed links – 13 GHz (12.75-13.25 GHz)	Recommendation ITU-R F.497  The band 12.75-13.25 GHz is part of the ITU RR Appendix 30B Plan (FSS Earth-to-space)
<b>13.25-13.4 GHz</b> EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	<b>13.25-13.4 GHz</b> EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION SPACE RESEARCH (active)	Airborne Doppler Radar	
<b>13.4-13.65 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	<b>13.4-13.65 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH Standard frequency and time signal-satellite (Earth-to-space)	SRD: Radio determination Applications	Report ITU-R SM.2153
<b>13.65-13.75 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	<b>13.65-13.75 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH Standard frequency and time signal-satellite (Earth-to-space)	RADIOLOCATION	
<b>13.75-14 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	<b>13.75-14 GHz</b> FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research	FSS uplinks (PTP/VSAT/SNG)  RADIOLOCATION	
<b>14-14.25 GHz</b>	<b>14-14.25 GHz</b> FIXED-SATELLITE (Earth-to-space)	FSS uplinks (PTP/VSAT/SNG)	Resolution 902 (WRC-23)  Recommendation ITU-R M.1643

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505	RADIONAVIGATION Mobile-Satellite (Earth-to-space) Space Research	Aeronautical Earth Stations/ ESV/ESIM Applications  NGSO FSS  Fixed links	
<b>14.25-14.3 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	<b>14.25-14.3 GHz</b> FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION Mobile-Satellite (Earth-to-space) Space Research	FSS uplinks (PTP/VSAT/SNG)  Aeronautical Earth Stations/ ESV/ESIM Applications  Fixed links	Resolution 902 (WRC-23)  Recommendation ITU-R M.1643
<b>14.3-14.4 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.457A. 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	<b>14.3-14.4 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) Radionavigation-satellite	FSS uplinks (PTP/VSAT/SNG)  Aeronautical Earth Stations/ ESV/ESIM Applications  Fixed links	Resolution 902 (WRC-23)  Recommendation ITU-R M.1643
<b>14.4-14.47 GHz</b> 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 Space research (space-to-Earth) 5.504A	<b>14.4-14.47 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) Space research (space-to-Earth)	FSS uplinks (PTP/VSAT/SNG)  Aeronautical Earth Stations/ ESV/ESIM Applications  Fixed links	Resolution 902 (WRC-23)  Recommendation ITU-R M.1643
<b>14.47-14.5 GHz</b> FIXED	<b>14.47-14.5 GHz</b> FIXED	FSS uplinks (PTP/VSAT/SNG)	Resolution 902 (WRC-23)  Recommendation ITU-R M.1643

ITU Region 3	Vanuatu	Typical Applications	Additional information
<p>FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B</p> <p>MOBILE except aeronautical mobile</p> <p>Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A</p> <p>Radio astronomy</p> <p>5.149 5.504A</p>	<p>FIXED-SATELLITE (Earth-to-space)</p> <p>MOBILE except aeronautical mobile</p> <p>Mobile-Satellite (Earth-to-space)</p> <p>Radio astronomy</p>	<p>Radio Astronomy (non-thermal synchrotron and enigmatic quasars)</p> <p>Aeronautical Earth Stations/ESV/ESIM Applications</p> <p>Fixed Links</p>	
<p><b>14.5-14.75 GHz</b></p> <p>FIXED</p> <p>FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510</p> <p>MOBILE</p> <p>Space research 5.509G</p>	<p><b>14.5-14.75 GHz</b></p> <p>FIXED</p> <p>FIXED-SATELLITE (Earth-to-space)</p> <p>MOBILE</p> <p>Space research</p>	<p>Fixed links – 15 GHz (14.5-15.35 GHz)</p>	<p>ITU Recommendation ITU-R F.636</p> <p>The band 14.5-14.8 GHz part of the ITU RR Appendix 30B Plan (FSS Earth-to-space)</p>
<p><b>14.75-14.8 GHz</b></p> <p>FIXED</p> <p>FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510</p> <p>MOBILE</p> <p>Space research 5.509G</p>	<p><b>14.75-14.8 GHz</b></p> <p>FIXED</p> <p>FIXED-SATELLITE (Earth-to-space)</p> <p>MOBILE</p> <p>Space research</p>	<p>Fixed links – 15 GHz (14.5-15.35 GHz)</p>	<p>ITU Recommendation ITU-R F.636</p> <p>The band 14.5-14.8 GHz is part of the ITU RR Appendix 30B Plan (FSS Earth-to-space)</p>
<p><b>14.8-15.35 GHz</b></p> <p>FIXED</p> <p>MOBILE</p> <p>SPACE RESEARCH 5.510A 5.339</p>	<p><b>14.8-15.35 GHz</b></p> <p>FIXED</p> <p>MOBILE</p> <p>SPACE RESEARCH</p>	<p>Fixed links – 15 GHz (14.5-15.35 GHz)</p>	<p>Recommendation ITU-R F.636</p>
<p><b>15.35-15.4 GHz</b></p> <p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>RADIO ASTRONOMY</p> <p>SPACE RESEARCH (passive)</p> <p>5.340 5.511</p>	<p><b>15.35-15.4 GHz</b></p> <p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>RADIO ASTRONOMY</p> <p>SPACE RESEARCH (passive)</p>	<p>Radio Astronomy (for observation of non-thermal synchrotron sources and quasars)</p>	
<p><b>15.4-15.41 GHz</b></p> <p>RADIOLOCATION 5.511E 5.511F</p> <p>AERONAUTICAL RADIONAVIGATION</p>	<p><b>15.4-15.41 GHz</b></p> <p>RADIOLOCATION</p> <p>AERONAUTICAL RADIONAVIGATION</p>	<p>Radio altimeters / Doppler Radars</p>	<p>ICAO Guidelines on Radiocommunications (Annex 10)</p>

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>15.41-15.43 GHz</b> RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511H	<b>15.41-15.43 GHz</b> RADIOLOCATION AERONAUTICAL RADIONAVIGATION	Radio altimeters / Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
<b>15.43-15.63 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C 5.511H	<b>15.43-15.63 GHz</b> FIXED-SATELLITE (Earth-to-space) RADIOLOCATION AERONAUTICAL RADIONAVIGATION	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
<b>15.63-15.7 GHz</b> RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511H	<b>15.63-15.7 GHz</b> RADIOLOCATION AERONAUTICAL RADIONAVIGATION	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
<b>15.7-16.6 GHz</b> RADIOLOCATION 5.512 5.513	<b>15.7-16.6 GHz</b> RADIOLOCATION	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
<b>16.6-17.1 GHz</b> RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	<b>16.6-17.1 GHz</b> RADIOLOCATION Space Research (deep space)(Earth-to-space)	WAS/RLAN (17.1-17.3 GHz)	
<b>17.1-17.2 GHz</b> RADIOLOCATION 5.512 5.513	<b>17.1-17.2 GHz</b> RADIOLOCATION	WAS/RLAN (17.1-17.3 GHz)	
<b>17.2-17.3 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	<b>17.2-17.3 GHz</b> EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	Broadcasting satellite systems feeder links	
<b>17.3-17.7 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	<b>17.3-17.7 GHz</b> FIXED-SATELLITE (Earth-to-space) Radiolocation	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS) Broadcasting satellite systems feeder links	The band 17.3-17.7 GHz is part of the ITU RR Appendix 30B Plan (Feeder Links for BSS)

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>17.7-17.8 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A 5.517B (Earth-to-space) 5.516 MOBILE	<b>17.7-17.8 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM.
<b>17.8-18.1 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	<b>17.8-18.1 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM.
<b>18.1-18.4 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B (Earth-to-space) 5.520 INTER-SATELLITE 5.521A MOBILE  5.519 5.521	<b>18.1-18.4 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) INTER-SATELLITE MOBILE	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM
<b>18.4-18.6 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B INTER-SATELLITE 5.521A MOBILE	<b>18.4-18.6 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM
<b>18.6-18.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive)  5.522A	<b>18.6-18.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Space research (passive)	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>18.8-19.3 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.517B 5.523A INTER-SATELLITE 5.521A MOBILE	<b>18.8-19.3 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	Fixed links – 18 GHz (17.7-19.7 GHz)  ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM
<b>19.3-19.7 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E INTER-SATELLITE 5.521A MOBILE	<b>19.3-19.7 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE	ESIM (under the FSS)	Recommendation ITU-R F.595  Resolution 169 (WRC-23) for ESIM
<b>19.7-20.1 GHz</b> FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A Mobile-satellite (space-to-Earth)  5.524	<b>19.7-20.1 GHz</b> FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)	ESIM (under the FSS)	Resolution 156 (WRC-23) for ESIM
<b>20.1-20.2 GHz</b> FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	<b>20.1-20.2 GHz</b> FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE-SATELLITE (space-to-Earth)	ESIM (under the FSS)	Resolution 156 (WRC-23) for ESIM
<b>20.2-21.2 GHz</b> FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) INTER-SATELLITE 5.521A Standard frequency and time signal-satellite (space-to-Earth)  5.524 5.529A	<b>20.2-21.2 GHz</b> FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth)	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	
<b>21.2-21.4 GHz</b> EARTH EXPLORATION-SATELLITE (passive)	<b>21.2-21.4 GHz</b> EARTH EXPLORATION-SATELLITE (passive)	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Recommendation ITU-R F.637

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED MOBILE SPACE RESEARCH (passive)	FIXED MOBILE SPACE RESEARCH (passive)		
<b>21.4-22 GHz</b> FIXED MOBILE BROADCASTING-SATELLITE 5.208B  5.530A 5.530B 5.531	<b>21.4-22 GHz</b> FIXED MOBILE BROADCASTING-SATELLITE	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)  Broadcasting satellite systems	Recommendation ITU-R F.637
<b>22-22.2 GHz</b> FIXED MOBILE except aeronautical mobile 5.531E  5.149	<b>22-22.2 GHz</b> FIXED MOBILE except aeronautical mobile	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Recommendation ITU-R F.637  In making assignments to stations in the frequency band 22.01-22.21 GHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>22.2-22.21 GHz</b> FIXED MOBILE except aeronautical mobile 5.149	<b>22.2-22.21 GHz</b> FIXED MOBILE except aeronautical mobile	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Recommendation ITU-R F.637  In making assignments to stations in the frequency band 22.01-22.21 GHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>22.21-22.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)  5.149 5.532	<b>22.21-22.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Recommendation ITU-R F.637  In making assignments to stations in the frequency band 22.21-22.5 GHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>22.5-22.55 GHz</b> FIXED	<b>22.5-22.55 GHz</b> FIXED	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Recommendation ITU-R F.637

ITU Region 3	Vanuatu	Typical Applications	Additional information
MOBILE	MOBILE		
<b>22.55-23.15 GHz</b> FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	<b>22.55-23.15 GHz</b> FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (Earth-to-space)	Fixed links	Recommendation ITU-R F.637  In making assignments to stations in the frequency band 22.81 – 22.86 GHz and 23.07 – 23.12 GHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>23.15-23.55GHz</b> FIXED INTER-SATELLITE 5.338A MOBILE	<b>23.15-23.55 GHz</b> FIXED INTER-SATELLITE MOBILE	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	
<b>23.55-23.6 GHz</b> FIXED MOBILE	<b>23.55-23.6 GHz</b> FIXED MOBILE		Recommendation ITU-R F.637
<b>23.6-24 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	<b>23.6-24 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observation of ammonia and continuum observations)	
<b>24-24.05 GHz</b> AMATEUR AMATEUR-SATELLITE 5.150	<b>24-24.05 GHz</b> AMATEUR AMATEUR-SATELLITE	ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz  SRD applications (24-4.25 GHz)	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>24.05-24.25 GHz</b> RADIOLOCATION Amateur Earth exploration-satellite (active)  5.150	<b>24.05-24.25 GHz</b> RADIOLOCATION Amateur Earth Exploration-Satellite (active)	SRD: Reservoir Level Probing Radar (RLPR)  ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>24.25-24.45 GHz</b> FIXED MOBILE 5.338A 5.532AB	<b>24.25-24.45 GHz</b> FIXED MOBILE	Fixed links (24.25 – 26.5 GHz)  IMT (24.25-27.5 GHz)	Recommendation ITU-R F.748

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIONAVIGATION	RADIONAVIGATION		Temporary fixed links for ENG/OB
<b>24.45-24.65 GHz</b> FIXED INTER-SATELLITE MOBILE 5.338A 5.532AB RADIONAVIGATION  5.533	<b>24.45-24.65 GHz</b> FIXED INTER-SATELLITE MOBILE RADIONAVIGATION	Fixed links - 26 GHz (24.25-26.5 GHz)  BFWA (24.5-26.5 GHz)  IMT (24.25-27.5 GHz))	Recommendation ITU-R F.748
<b>24.65-24.75 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.338A 5.532AB	<b>24.65-24.75 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE MOBILE	Fixed links - 26 GHz (24.25-26.5 GHz) FWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Recommendation ITU-R F.748
<b>24.75-25.25 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE 5.338A 5.532AB	<b>24.75-25.25 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	Fixed links - 26 GHz (24.5-26.5 GHz)  BFWA (24.5-26.5 GHz)  IMT (24.25-27.5 GHz)	Recommendation ITU-R F.748
<b>25.25-25.5 GHz</b> FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	<b>25.25-25.5 GHz</b> FIXED 5.534A INTER-SATELLITE MOBILE Standard frequency and time signal-satellite (Earth-to-space)	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Recommendation ITU-R F.748.
<b>25.5-27 GHz</b> 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	<b>25.5-27 GHz</b> EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED INTER-SATELLITE MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth)	Fixed links - 26 GHz (24.5-26.5 GHz)  BFWA (24.5-26.5 GHz)  IMT (24.25-27.5 GHz)	Recommendation ITU-R F.748  Resolution 242 (WRC-19)

ITU Region 3	Vanuatu	Typical Applications	Additional information
Standard frequency and time signal-satellite (Earth-to-space)  5.536A	Standard frequency and time signal-satellite (Earth-to-space)		
<b>27-27.5 GHz</b> FIXED 5.534A FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE <a href="#">5.338A</a> <a href="#">5.532AB</a>	<b>27-27.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE MOBILE	IMT (24.25-27.5 GHz)	Resolution 242 (WRC-19)
<b>27.5-28.5 GHz</b> FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539 INTER-SATELLITE 5.521A MOBILE  5.538 5.540	<b>27.5-28.5 GHz</b> FIXED 5.537A FIXED-SATELLITE (Earth-to-space) MOBILE	Fixed links – 28 GHz (27.5-29.5 GHz)  ESIM (under the FSS)  The band 27.5-30 GHz may be used by the FSS for BSS feeder links	Recommendation ITU-R F.748  Resolution 143 (WRC-19) Resolution 169 (WRC-19)
<b>28.5-29.1 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.523A 5.539 INTER-SATELLITE <a href="#">5.521A</a> MOBILE Earth exploration-satellite (Earth-to-space) 5.541  5.540	<b>28.5-29.1 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE MOBILE Earth exploration-satellite (Earth-to-space)	Fixed links – 28 GHz (27.5-29.5 GHz)  ESIM (under the FSS)  The band 27.5-30 GHz may be used by the FSS for BSS feeder links	Recommendation ITU-R F.748  Resolution 143 (WRC-19) Resolution 169 (WRC-19)
<b>29.1-29.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A	<b>29.1-29.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space)  INTER-SATELLITEMOBILE	Fixed links  ESIM (under the FSS)	Recommendation ITU-R F.748  Resolution 169 (WRC-19)

ITU Region 3	Vanuatu	Typical Applications	Additional information
INTER-SATELLITE 5.521A MOBILE Earth exploration-satellite (Earth-to-space) 5.541  5.540	Earth exploration-satellite (Earth-to-space)		
<b>29.5-29.9 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 INTER-SATELLITE 5.521A Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space)  5.540 5.542	<b>29.5-29.9 GHz</b> FIXED-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) Mobile-satellite (Earth-to-space)	ESIM (under the FSS)	Resolution 143 (WRC-19)  Resolution 156 (WRC-15)
<b>29.9-30 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539 INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	<b>29.9-30 GHz</b> FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space)	ESIM (under the FSS)	Resolution 143 (WRC-19)  Resolution 156 (WRC-15)
<b>30-31 GHz</b> FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.529A 5.542	<b>30-31 GHz</b> FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth)	ESIM (under the FSS)	Resolution 143 (WRC-19)  Resolution 156 (WRC-15)
<b>31-31.3 GHz</b> FIXED 5.338A 5.543B MOBILE	<b>31-31.3 GHz</b> FIXED MOBILE	Fixed links  Fixed satellite systems	Recommendation ITU-R F.746  Resolution 167 (WRC-19)

ITU Region 3	Vanuatu	Typical Applications	Additional information
Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research		
<b>31.3-31.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	<b>31.3-31.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Continuum Observations)	
<b>31.5-31.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	<b>31.5-31.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile	Radio Astronomy (Continuum Observations)	
<b>31.8-32 GHz</b> FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	<b>31.8-32 GHz</b> FIXED RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Recommendation ITU-R F.1520 Resolution 75 (WRC-23)
<b>32-32.3 GHz</b> FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	<b>32-32.3 GHz</b> FIXED RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Recommendation ITU-R F.1520 Resolution 75 (WRC-23)
<b>32.3-33 GHz</b> FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	<b>32.3-33 GHz</b> FIXED INTER-SATELLITE RADIONAVIGATION	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Recommendation ITU-R F.1520 Resolution 75 (WRC-23)
<b>33-33.4 GHz</b> FIXED 5.547A RADIONAVIGATION	<b>33-33.4 GHz</b> FIXED RADIONAVIGATION	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Recommendation ITU-R F.1520 Resolution75 (WRC-23)

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.547 5.547E			
<b>33.4-34.2 GHz</b> RADIOLOCATION 5.549	<b>33.4-34.2 GHz</b> RADIOLOCATION		
<b>34.2-34.7 GHz</b> RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	<b>34.2-34.7 GHz</b> RADIOLOCATION SPACE RESEARCH (deep space)(Earth-to-space)		
<b>34.7-35.2 GHz</b> RADIOLOCATION Space research 5.550 5.549	<b>34.7-35.2 GHz</b> RADIOLOCATION Space Research		
<b>35.2-35.5 GHz</b> METEOROLOGICAL AIDS RADIOLOCATION 5.549	<b>35.2-35.5 GHz</b> METEOROLOGICAL AIDS RADIOLOCATION		
<b>35.5-36 GHz</b> METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)  5.549 5.549A	<b>35.5-36 GHz</b> METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)		
<b>36-37 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	<b>36-37 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)		In making assignments to stations in the frequency band 36.43-36.5 GHz, consideration will be given to Radio Astronomy applications as per ITU RR n° 5.149
<b>37-37.5 GHz</b> FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth)	<b>37-37.5 GHz</b> FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth)	Fixed links - 38 GHz (37.0-39.5 GHz)  IMT (37-43.5 GHz)	Resolution 75 (WRC-23) Resolution 243 (WRC-19)  Recommendation ITU-R F.749

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.547			
<b>37.5-38 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.550C 5.550CA MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth)	<b>37.5-38 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth)	Fixed links - 38 GHz (37.0-39.5 GHz)  IMT (37-43.5 GHz)	Resolution 75 (WRC-23) Resolution 243 (WRC-19) Resolution 168 (WRC-19)  Recommendation ITU-R F.749
5.547			
<b>38-39.5 GHz</b> FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth)	<b>38-39.5 GHz</b> FIXED 5.550D FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth)	Fixed links - 38 GHz (37.0-39.5 GHz)  IMT (37-43.5 GHz)	Resolution 75 (WRC-23) Resolution 243 (WRC-19) Resolution 168 (WRC-19)  Recommendation ITU-R F.749
5.547			
<b>39.5-40 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E	<b>39.5-40 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth)	IMT (37-43.5 GHz)  Fixed Links	Resolution 75 (WRC-23) Resolution 143 (WRC-19) Resolution 243 (WRC-19) Resolution 168 (WRC-19)  Recommendation ITU-R F.749
<b>40-40.5 GHz</b> 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	<b>40-40.5 GHz</b> EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	IMT (37-43.5 GHz)	Resolution 143 (WRC-19) Resolution 243 (WRC-19)
<b>40.5-41 GHz</b>	<b>40.5-41 GHz</b>	Fixed links (40.5 – 43.5 GHz)	Resolution 75 (WRC-23)

ITU Region 3	Vanuatu	Typical Applications	Additional information
FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	IMT (37-43.5 GHz)	Resolution 243 (WRC-19)  Recommendation ITU-R F.2005
<b>41-42.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547 5.551F 5.551H 5.551I	<b>41-42.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) LAND MOBILE BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile	Fixed links (40.5 – 43.5 GHz)  IMT (37-43.5 GHz)	Resolution 75 (WRC-23) Resolution 243 (WRC-19)  Recommendation ITU-R F.2005
<b>42.5-43.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY  5.149 5.547	<b>42.5-43.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except Aeronautical Mobile RADIO ASTRONOMY	Fixed links (40.5 – 43.5 GHz)  IMT (37-43.5 GHz)  Radio Astronomy (Observation of silicon monoxide)	Resolution 75 (WRC-23) Resolution 243 (WRC-19)  Recommendation ITU-R F.2005
<b>43.5-47 GHz</b> MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.554	<b>43.5-47 GHz</b> MOBILE MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	IMT (45.5-47 GHz)	Resolution 244 (WRC-19)
<b>47-47.2 GHz</b> AMATEUR AMATEUR-SATELLITE	<b>47-47.2 GHz</b> AMATEUR AMATEUR-SATELLITE		

ITU Region 3	Vanuatu	Typical Applications	Additional information
<b>47.2-47.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B  5.552A	<b>47.2-47.5 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	IMT (47.2-48.2 GHz)	Resolution 243 (WRC-19)  Resolution 122 (WRC-19)
<b>47.5-47.9 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B	<b>47.5-47.9 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	IMT (47.2-48.2 GHz)	Resolution 143 (WRC-19) Resolution 243 (WRC-19)
<b>47.9-48.2 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B  5.552A	<b>47.9-48.2 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	IMT (47.2-48.2 GHz)	Resolution 243 (WRC-19)  Resolution 122 (WRC-19)
<b>48.2-50.2 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.516B 5.550C 5.552 MOBILE 5.149 5.340 5.555	<b>48.2-50.2 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		Resolution 143 (WRC-19) In making assignments to stations in the frequency band 48.94-49.04 GHz, consideration will be given to Radio Astronomy applications as per ITU RR N° 5.149
<b>50.2-50.4 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	<b>50.2-50.4 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	Fixed Links	
<b>50.4-51.4 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	<b>50.4-51.4 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-Satellite (Earth-to-space)		
<b>51.4-52.4 GHz</b>	<b>51.4-52.4 GHz</b>		Resolution 75 (WRC-23)

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FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		
<b>52.4-52.6 GHz</b> FIXED 5.338A MOBILE 5.547 5.556	<b>52.4-52.6 GHz</b> FIXED MOBILE		
<b>52.6-54.25 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	<b>52.6-54.25 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	Passive sensing (53.6 – 59.3 GHz)	
<b>54.25-55.78 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	<b>54.25-55.78 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)	Passive sensing (53.6 – 59.3 GHz)	
<b>55.78-56.9 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	<b>55.78-56.9 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (passive)	Passive sensing (53.6 – 59.3 GHz)	Resolution 75 (WRC-23)
<b>56.9-57 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	<b>56.9-57 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (passive)	Passive sensing (53.6 – 59.3 GHz)	Resolution 75 (WRC-23)
<b>57-58.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED	<b>57-58.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED	Passive sensing (53.6 – 59.3 GHz) Fixed Links	Resolution 75 (WRC-23) Report ITU-R M.2227

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INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	INTER-SATELLITE MOBILE SPACE RESEARCH (passive)	Wireless Access Systems (WAS)/RLAN  SRD Applications (57 – 64 GHz)	Recommendation ITU-R M.2003 ETSI EN 302 567 ETSI EN 305 550
<b>58.2-59 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	<b>58.2-59 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Wireless Access Systems (WAS)/RLAN  Passive sensing (53.6 – 59.3 GHz)	Resolution 75 (WRC-23)  ETSI EN 302 567
<b>59-59.3 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	<b>59-59.3 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE RADIOLOCATION SPACE RESEARCH (passive)	Wireless Access Systems (WAS)/RLAN  Passive sensing (53.6 – 59.3 GHz)	Resolution 75 (WRC-23)  ETSI EN 302 567
<b>59.3-64 GHz</b> FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	<b>59.3-64 GHz</b> FIXED INTER-SATELLITE MOBILE RADIOLOCATION 5.559 5.138	SRD applications (61-61.5 GHz): Reservoir Level Probing Radar (RLPR)  ISM band (61-61.5 GHz) Center frequency 61.25 GHz  Wireless Access Systems (WAS)/RLAN	Recommendation ITU-R SM.1896 Report ITU-R SM.2153  ETSI EN 302 567
<b>64-65 GHz</b> FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	<b>64-65 GHz</b> FIXED INTER-SATELLITE MOBILE except aeronautical mobile	Wireless Access Systems (WAS)/RLAN	Resolution 75 (WRC-23)  ETSI EN 302 567
<b>65-66 GHz</b> EARTH EXPLORATION-SATELLITE FIXED	<b>65-66 GHz</b> EARTH EXPLORATION-SATELLITE FIXED	Wireless Access Systems (WAS)/RLAN	Resolution 75 (WRC-23)  ETSI EN 302 567

ITU Region 3	Vanuatu	Typical Applications	Additional information
INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH		
<b>66-71 GHz</b> INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.554	<b>66-71 GHz</b> INTER-SATELLITE MOBILE MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	IMT (66-71 GHz)  Wireless Access Systems (WAS)/RLAN	Resolution 241 (WRC-19).
<b>71-74 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	<b>71-74 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Fixed links (71-76 GHz)	Recommendation ITU-R F.2006
<b>74-76 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	<b>74-76 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth)	Fixed links (71-76 GHz)	Recommendation ITU-R F.2006
<b>76-77.5 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	<b>76-77.5 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth)	Radio Astronomy (Observations of continuum lines and celestial objects)  ISM Band (76 – 77 GHz)  SRD: Road Transport and Traffic Telematics Radar (76 – 77 GHz)	Recommendation ITU-R M.1452 Report ITU-R SM. 2153

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		Reservoir Level Probing Radar (RLPR)	
<b>77.5-78 GHz</b> AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	<b>77.5-78 GHz</b> AMATEUR AMATEUR-SATELLITE RADIOLOCATION Radio astronomy Space research (space-to-Earth)	Radio Astronomy (Observations of continuum lines and celestial objects)	
<b>78-79 GHz</b> RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	<b>78-79 GHz</b> RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth)	Radio Astronomy (Observations of continuum lines and celestial objects)	
<b>79-81 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	<b>79-81 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)	Radio Astronomy (Observations of continuum lines and celestial objects)	
<b>81-84 GHz</b> 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	<b>81-84 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth)	Radio Astronomy (Observations of continuum lines and celestial objects )  Fixed links (81-86 GHz)	Recommendation ITU-R F.2006
<b>84-86 GHz</b> FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B	<b>84-86 GHz</b> FIXED 5.338A FIXED-SATELLITE (Earth-to-space)	Radio Astronomy (Observations of continuum lines and celestial objects)	Recommendation ITU-R F.2006

ITU Region 3	Vanuatu	Typical Applications	Additional information
MOBILE RADIO ASTRONOMY 5.149	MOBILE RADIO ASTRONOMY	Fixed links (81-86 GHz)	
<b>86-92 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	<b>86-92 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observations of continuum lines and celestial objects)	
<b>92-94 GHz</b> FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION  5.149	<b>92-94 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium)	
<b>94-94.1 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	<b>94-94.1 GHz</b> EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium)  Short Range Radar Systems  Cloud Profile Radar	
<b>94.1-95 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	<b>94.1-95 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium)  Short Range Radar Systems	
<b>95-100 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	<b>95-100 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur)	

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	RADIONAVIGATION RADIONAVIGATION-SATELLITE	monoxide and methyl acetylene)	
<b>100-102 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	<b>100-102 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur monoxide and methyl acetylene)	
<b>102-105 GHz</b> FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	<b>102-105 GHz</b> FIXED MOBILE RADIO ASTRONOMY	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur monoxide and methyl acetylene)	
<b>105-109.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	<b>105-109.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
<b>109.5-111.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	<b>109.5-111.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
<b>111.8-114.25 GHz</b> FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	<b>111.8-114.25 GHz</b> FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
<b>114.25-116 GHz</b>	<b>114.25-116 GHz</b>	Radio Astronomy (Observations of continuum	

ITU Region 3	Vanuatu	Typical Applications	Additional information
EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
<b>116-119.98 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive)  5.341	<b>116-119.98 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)	SRD Applications	
<b>119.98-122.25 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	<b>119.98-122.25 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)	SRD Applications  ISM Band (122 – 123 GHz) Centre frequency 122.5	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>122.25-123 GHz</b> FIXED INTER-SATELLITE MOBILE 5.558 Amateur  5.138	<b>122.25-123 GHz</b> FIXED INTER-SATELLITE MOBILE Amateur	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)  ISM Band (122 – 123 GHz) Centre frequency 122.5	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>123-130 GHz</b> FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	<b>123-130 GHz</b> FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
<b>130-134 GHz</b> EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558	<b>130-134 GHz</b> EARTH EXPLORATION-SATELLITE (active) FIXED INTER-SATELLITE MOBILE	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	

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RADIO ASTRONOMY 5.149 5.562A	RADIO ASTRONOMY		
<b>134-136 GHz</b> AMATEUR AMATEUR-SATELLITE Radio astronomy	<b>134-136 GHz</b> AMATEUR AMATEUR-SATELLITE Radio astronomy	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
<b>136-141 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	<b>136-141 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
<b>141-148.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	<b>141-148.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide, and carbon monoxide)	
<b>148.5-151.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	<b>148.5-151.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
<b>151.5-155.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	<b>151.5-155.5 GHz</b> FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
<b>155.5-158.5 GHz</b> FIXED MOBILE	<b>155.5-158.5 GHz</b> FIXED MOBILE		

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RADIO ASTRONOMY 5.149	RADIO ASTRONOMY		
<b>158.5-164 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	<b>158.5-164 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Radio Astronomy (Continuum Observations)	
<b>164-167 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  5.340	<b>164-167 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
<b>167-174.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558  5.149 5.562D	<b>167-174.5 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558		In making assignments to stations in the frequency band 168-174.5 GHz, consideration will be given to Radio Astronomy applications as per ITU RR n° 5.149
<b>174.5-174.8 GHz</b> FIXED INTER-SATELLITE  MOBILE 5.558	<b>174.5-174.8 GHz</b> FIXED INTER-SATELLITE MOBILE		
<b>174.8-182 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	<b>174.8-182 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)	Radio Astronomy (Observation of H <sub>2</sub> O)	
<b>182-185 GHz</b> EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	<b>182-185 GHz</b> EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		

ITU Region 3	Vanuatu	Typical Applications	Additional information
5.340			
<b>185-190 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	<b>185-190 GHz</b> EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)		
<b>190-191.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	<b>190-191.8 GHz</b> EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)		
5.340 <b>191.8-200 GHz</b> FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	<b>191.8-200 GHz</b> FIXED INTER-SATELLITE MOBILE MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	Radio Astronomy (Observation of carbon monoxide)	In making assignments to stations in the frequency band 191.8 – 231.5 GHz, consideration will be given to Radio Astronomy applications as per ITU RR n° 5.149
<b>200-209 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	<b>200-209 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observation of carbon monoxide)	
<b>209-217 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	<b>209-217 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	Radio Astronomy (Observation of carbon monoxide)	

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<b>217-226 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	<b>217-226 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observation of carbon monoxide)	
<b>226-231.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	<b>226-231.5 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
<b>231.5-232 GHz</b> FIXED MOBILE Radiolocation	<b>231.5-232 GHz</b> FIXED MOBILE Radiolocation		
<b>232-235 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	<b>232-235 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
<b>235-238 GHz</b> EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive) 5.563A 5.563B	<b>235-238 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive)		
<b>238-239.2 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION	<b>238-239.2 GHz</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION		

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIONAVIGATION RADIONAVIGATION-SATELLITE	RADIONAVIGATION RADIONAVIGATION-SATELLITE		
<b>239.2-240 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	<b>239.2-240 GHz</b> EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
<b>240-241 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIOLOCATION	<b>240-241 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIOLOCATION	SRD Applications	
<b>241-242.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	<b>241-242.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	Radio astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO <sup>+</sup> and formally) ISM Band (244 – 246 GHz) centre frequency 245 GHz	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>242.2-244.2 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	<b>242.2-244.2 GHz</b> RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	Radio astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO <sup>+</sup> and formally) ISM Band (244 – 246 GHz) centre frequency 245 GHz	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>244.2-247.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	<b>244.2-247.2 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	Radio astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO <sup>+</sup> and formally) ISM Band (244 – 246 GHz) centre frequency 245 GHz	Recommendation ITU-R SM.1896  Report ITU-R SM.2153
<b>247.2-248 GHz</b> RADIO ASTRONOMY	<b>247.2-248 GHz</b> RADIO ASTRONOMY	Radio astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN	Recommendation ITU-R SM.1896

ITU Region 3	Vanuatu	Typical Applications	Additional information
RADIOLOCATION Amateur Amateur-satellite  5.149	RADIOLOCATION Amateur Amateur-satellite	Hydrogen cyanide, HCO+ and formallyl) ISM Band (244 – 246 GHz) centre frequency 245 GHz	Report ITU-R SM.2153
<b>248-250 GHz</b> AMATEUR AMATEUR-SATELLITE Radio astronomy  5.149	<b>248-250 GHz</b> AMATEUR AMATEUR-SATELLITE Radio astronomy	Radio Astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO+ and formallyl)	
<b>250-252 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	<b>250-252 GHz</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio Astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO+ and formallyl)	
<b>252-265 GHz</b> FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	<b>252-265 GHz</b> FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE	Radio Astronomy (Observation of spectral lines of C <sub>2</sub> H, HCN Hydrogen cyanide, HCO+ and formallyl)	
<b>265-275 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	<b>265-275 GHz</b> FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY		
<b>275-3000 GHz</b> (Not allocated) 5.564A 5.565	<b>275-3000 GHz</b> (Not allocated)		

## Chapter V. International ITU Radio Regulations Footnotes Applicable to ITU Region 3

**5.53** Administrations authorizing the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused thereby to the 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)

**5.54C** *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)

**5.57** 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)

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

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

**5.62** 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.

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

**5.67** *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)

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

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

**5.77** *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)

**5.78** *Different category of service:* in Cuba, the United States of America and Mexico, the allocation of the band 415-435 kHz to the aeronautical radionavigation service is on a primary basis.

**5.79** 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-97)**). (WRC-97)

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

**5.80A** 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 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)

**5.82D** When establishing coast stations in the NAVDAT system on the frequencies 500 kHz and 4 226 kHz, the conditions for the use of the frequencies 500 kHz and 4 226 kHz are prescribed in Articles 31 and 52. Administrations are strongly recommended to coordinate the NAVDAT systems operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution 364 (WRC-23)). (WRC-23)

**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)

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

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

**5.97** In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.

**5.106** In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service communicating only within national borders and whose mean power does not exceed 50 W. In notifying the frequencies, the attention of the Bureau should be drawn to these provisions.

**5.108** The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles **31** and **52**. (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 used for the automatic connection system (ACS), as described in the most recent version of Recommendation ITU-R M.541. (WRC-23).

**5.111** The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**.

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  $\pm 3$  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), 3 200-3400 kHz, 4 750-4 995 kHz and 5 005-5 060 kHz by the broadcasting service, see Nos. **5.16** to **5.20, 5.21** and **23.3** to **23.10**.

**5.115** The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31** and Appendix **13** by stations of the maritime mobile service engaged in coordinated search and rescue operations. (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)

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

**5.127** The use of the band 4 000-4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **5.2.220** and Appendix **17**).

**5.128** Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, 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 Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the 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 Appendices 15 and 17). (WRC-23).

**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)

**5.133A** Alternative allocation: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5250-5 275 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 territories within the Kingdom of the Netherlands in Region 2, stations in the amateur service using the frequency band 5351.5-5 366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC-19)

**5.134** The use of the 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 urged to use these 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.

**5.137A** The frequencies 6 337.5 kHz, 8 443 kHz, 12 663.5 kHz, 16 909.5 kHz and 22 450.5 kHz are the regional frequencies for the transmission of maritime safety information (MSI) by means of the NAVDAT system (see Appendices 15 and 17). (WRC-23)

**5.138** The following bands:

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

are designated for industrial, scientific and medical (Industrial, Scientific and Medical) applications. The use of these frequency bands for Industrial, Scientific and Medical 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)

**5.143** *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, 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** and in Appendix **13**. (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 radiolocations service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev. WRC-12)**. (WRC-07)

**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

13 360 - 13 410 kHz,	25 550 - 25 670 kHz,
37.5 - 38.25 MHz,	73 - 74.6 MHz in Regions 1 and 3,
150.05 - 153 MHz in Region 1,	322 - 328.6 MHz,
406.1 - 410 MHz,	608 - 614 MHz in Regions 1 and 3,
1 330 - 1 400 MHz,	1 610.6 - 1 613.8 MHz,
1 660 - 1 670 MHz,	1 718.8 - 1 722.2 MHz,
2 655 - 2 690 MHz,	3 260 - 3 267 MHz,
3 332 - 3 339 MHz,	3 345.8 - 3 352.5 MHz,

4 825 - 4 835 MHz,	4 950 - 4 990 MHz,
4 990 - 5 000 MHz,	6 650 - 6 675.2 MHz,
10.6 - 10.68 GHz,	14.47 - 14.5 GHz,
22.01 - 22.21 GHz,	22.21 - 22.5 GHz,
22.81 - 22.86 GHz,	23.07 - 23.12 GHz,
31.2 - 31.3 GHz,	31.5 - 31.8 GHz in Regions 1 and 3,
36.43 - 36.5 GHz,	42.5 - 43.5 GHz,
42.77 - 42.87 GHz,	43.07 - 43.17 GHz,
43.37 - 43.47 GHz,	48.94 - 49.04 GHz,
76 - 86 GHz,	92 - 94 GHz,
94.1 - 100 GHz,	102 - 109.5 GHz,
111.8 - 114.25 GHz,	128.33 - 128.59 GHz,
129.23 - 129.49 GHz,	130 - 134 GHz,
136 - 148.5 GHz,	151.5 - 158.5 GHz,
168.59 - 168.93 GHz,	171.11 - 171.45 GHz,
172.31 - 172.65 GHz,	173.52 - 173.85 GHz,
195.75 - 196.15 GHz,	209 - 226 GHz,
241 - 250 GHz,	252 - 275 GHz

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **4.5** and **4.6** and Article **29**). (WRC-07)

**5.150** The following bands:

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

are also designated for industrial, scientific and medical (Industrial, Scientific and Medical) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. Industrial, Scientific and Medical 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.

**5.155** *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.

**5.159A** The use of the frequency band 40-50 MHz by the Earth exploration-satellite service (active) shall be in accordance with the geographical area restrictions and the operational and technical conditions defined in Resolution 677 (WRC-23). 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-23)

**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)

**5.162** *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 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)

**5.167** *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Iran (Islamic Republic of), Pakistan and Singapore, the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)

**5.167A** *Additional allocation:* in Indonesia and Thailand, the band 50-54 MHz is also allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)

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

**5.170** *Additional allocation:* in New Zealand, the frequency band 51-54 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

**5.176** *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-12)

**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 allocation:* 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)

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

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

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

**5.192** *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 frequency 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-23). The use of the frequency 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-23)

**5.198A** The use of the frequency band 117.975-137 MHz by the aeronautical mobile-satellite (R) service is subject to coordination under No. 9.11A. No. 9.16 does not apply. Such use shall be limited to non-geostationary-satellite systems operated in accordance with international aeronautical standards. Resolution 406 (WRC-23) applies. (WRC-23)

**5.198B** The use of the frequency band 117.975-137 MHz by the aeronautical mobile (R) service shall have priority over use by the aeronautical mobile-satellite (R) service. (WRC-23)

**5.200** In the frequency 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 and the aeronautical mobile- satellite service. (WRC-23)

**5.201** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Egypt, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Mali, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Qatar, Kyrgyzstan, Romania, Senegal, Somalia, Tajikistan and Turkmenistan, 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-23)

**5.202** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, 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 and Turkmenistan, 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-23)

**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 bands:

- 137-138 MHz,
- 157.1875-157.3375 MHz,
- 161.7875-161.9375 MHz,
- 387-390 MHz,
- 400.15-401 MHz,
- 1 452-1 492 MHz,
- 1 525-1 610 MHz,
- 1 613.8-1 626.5 MHz,

2 655-2 690 MHz,

21.4-22 GHz,

Resolution **739 (Rev.WRC-19)** applies. (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)

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

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

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

**5.218** *Additional allocation:* the band 148-149.9 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under **No. 9.21**. The bandwidth of any individual transmission shall not exceed  $\pm 25$  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/(m<sup>2</sup> 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 band 148-149.9 MHz by the mobile-satellite service is subject to coordination under **No. 9.11A**. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the band 148-149.9 MHz. The use of the frequency band 148-149.9 MHz by nongeostationary-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, Türkiye, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-23)

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

**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 and 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( $\mu$ V/m) for 10% of the time produced at 10m 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 -10dB 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 60m 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)

**5.228AA** 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)

**5.228E** 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)

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

**5.231** *Additional allocation:* in Afghanistan and China, the band 167-174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected. (WRC-12)

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

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

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

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

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

**5.254** The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No.

**5.256A.** (WRC-03)

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

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

**5.260A** 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  $\pm 25$  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)

**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 no later than 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-23)

**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  $-153 \text{ dB(W/m}^2\text{)}$  for  $0^\circ \leq \theta \leq 5^\circ$ ,  $-153 + 0.077 (8 - 5) \text{ dB(W/m}^2\text{)}$  for  $5^\circ \leq \theta \leq 70^\circ$  and  $-148 \text{ dB(W/m}^2\text{)}$  for  $70^\circ \leq \theta \leq 90^\circ$ , where  $\theta$  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, Brazil, the United States, India, Japan and the United Kingdom, the allocation of the frequency bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. 5.33). (WRC-23).

**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)

**5.276** *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)

**5.279A** 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)

**5.281** *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.

**5.286** 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 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 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)

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

**5.296A** In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470-698 MHz, or portions thereof, and in Bangladesh, Lao P.D.R., Maldives, New Zealand and Viet Nam, the frequency band 610-698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-23). 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. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply. (WRC-23)

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

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

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

**5.307** *Additional allocation:* in India, the band 608-614 MHz is also allocated to the radio astronomy service on a primary basis.

**5.313A** The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). 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. In China, the use of IMT in this frequency band will not start until 2015. (WRC-19)

**5.314A** The frequency band 698-960 MHz, or portions thereof, in Australia, Maldives, Micronesia, Papua New Guinea, Tonga and Vanuatu, and the frequency bands 703-733 MHz, 758-788 MHz, 890-915 MHz and 935-960 MHz, or portions thereof, in China, India, Indonesia, Japan, Korea (Rep. of), Malaysia, the Philippines and Thailand are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). 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. Resolution 213 (WRC-23) shall apply. HIBS shall not claim protection from existing primary services. No. 5.43A does not apply, see resolves 2 of Resolution 213 (WRC-23). Such use of HIBS in the frequency bands 698-728 MHz and 830-835 MHz is limited to reception by HIBS. (WRC-23)

**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-23), 760 (Rev.WRC-23) and 749 (Rev.WRC-23), 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-23)

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

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

**5.327A** The use of the 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 (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-07)

**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 (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 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 band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. **5.43** shall not apply in respect of the radiolocation service. Resolution **608 (WRC-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, Palestine\*, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23)

**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, Djibouti, 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, Palestine\*, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, 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-23)

**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)

**5.332A** Administrations authorizing operation of the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz, or portions thereof, shall ensure that the amateur and amateur-satellite services do not cause harmful interference to radionavigation-satellite service (space-to-Earth) receivers in accordance with No. 5.29 (see the most recent version of Recommendation ITU-R M.2164). The authorizing administration, upon receipt of a report of harmful interference caused by a station of the amateur or amateur-satellite services, shall take all necessary steps to rapidly eliminate such interference. (WRC-23)

**5.334** *Additional allocation:* in Canada and the United States, the band 1 350-1 370 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

**5.335A** 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)

**5.338A** 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.

**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:

1 400-1 427 MHz

2 690-2 700 MHz, except those provided for by No. **5.422**,

10.68-10.7 GHz, except those provided for by No. **5.483**,

15.35-15.4 GHz, except those provided for by No. **5.511**,

23.6-24 GHz,

31.3-31.5 GHz

31.5-31.8 GHz, in Region 2,

48.94-49.04 GHz, from airborne stations

50.2-50.4 GHz<sup>2</sup>

52.6-54.25 GHz

86-92 GHz

100-102 GHz

109.5-111.8 GHz

114.25-116 GHz

148.5-151.5 GHz

164-167 GHz,

182-185 GHz

190-191.8 GHz

200-209 GHz

226-231.5 GHz

250-252 GHz. (WRC-03)

**5.341** In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a program 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)

**5.341B** In Region 2, the frequency band 1 427-1 518 MHz is 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 this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

**5.341C** The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev. WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

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

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

**5.346A** The frequency band 1 452-1 492 MHz is identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-19)** and Resolution **761 (WRC-19)**. The use of this frequency band by the above administrations for the implementation of IMT is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile 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)

**5.348** 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  $-150 \text{ dB(W/m}^2\text{)}$  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)

**5.351** 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 frequency 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-23)** and **225 (Rev.WRC-23)**. (WRC-23)

**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). (WRC-2000)

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

**5.355** *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-23)** shall apply. (WRC-23)

**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)

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

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

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

**5.367** *Additional allocation:* The bands 1 610-1 626.5 MHz and 5 000-5 150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**. (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 bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see resolves 5 of Resolution **365 (WRC-23)**) and 1 621.35-1 626.5 MHz with respect to the maritime mobile-satellite service when used for the global maritime distress and safety system (GMDSS). In applying the procedure of Section II of Article 9, the provisions of No. **4.10** do not apply for the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see resolves 5 of Resolution **365 (WRC-23)**) and 2 483.59-2 499.91 MHz (space-to-Earth) for the maritime mobile-satellite service when used for the GMDSS with satellite networks or systems for which complete coordination information has been received by the Radiocommunication Bureau before 20 November 2023. Resolution **365 (WRC-23)** applies. (WRC-23)

**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)

**5.372** 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)

**5.372A** The maritime mobile-satellite service in the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3- 1 620.38 MHz (Earth-to-space) (see resolves 5 of Resolution **365 (WRC-23)**) and 2 483.59-2 499.91 MHz (space-to- Earth) when they are used for the global maritime distress and safety system (GMDSS) is limited to the geostationary- satellite networks identified in Resolution **365 (WRC-23)** and their associated earth stations located within a service area from 75°E to 135°E longitude and from 10°N to 55°N latitude. Resolution **365 (WRC-23)** applies. (WRC-23)

**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 6101 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 radiodeterminationsatellite service (Earth-to-space) in the frequency band 1 621.35-1626.5 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 frequency 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, urgency and safety communications (see Article **31**). (WRC-23)

**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)

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

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

**5.379B** The use of the frequency band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-23)

**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/m<sup>2</sup>) in 10 MHz and  $-194$  dB(W/m<sup>2</sup>) in any

20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2000s. (WRC-03)

**5.379D** For sharing of the frequency band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution **744 (Rev.WRC-23)** shall apply. (WRC-23)

**5.379E** For sharing of the band 1 668-1 675 MHz between the mobile-satellite service and the fixed, mobile and space research (passive) services. Resolution **744 (WRC-03)** shall apply. (WRC-03)

**5.380A** 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)

**5.381** *Additional allocation:* in Afghanistan, Cuba, India, Iran (Islamic Republic of) and Pakistan, the band 1 690-1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

**5.384A** The 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 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 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)

**5.388** 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** The frequency bands 1 710-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and the frequency bands 1 710-1 980 MHz and 2 110-2 160 MHz in Region 2 are identified for the use by high altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). 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. Resolution **221 (Rev.WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply. Such use of HIBS in the frequency bands 1 710-1 785 MHz in Regions 1 and 2, and 1 710-1 815 MHz in Region 3 is limited to reception by HIBS, and in the frequency band 2 110- 2 170 MHz is limited to transmission from HIBS. (WRC-23)

**5.389A** The use of the frequency 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-23)**. (WRC-23)

**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)

**5.389F** In Algeria, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the 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 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.

**5.393** *Additional allocation:* in Canada, the United States and India, the band 2 310-2 360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev. WRC-19)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. Complimentary terrestrial sound broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use. (WRC-19)

**5.394** In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-07)

**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.

**5.401** 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)

**5.402** The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. **9.11A**. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.

**5.403** Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz 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)

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

**5.407** In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed  $-152$  dB(W/m<sup>2</sup>/4 kHz) in Argentina, unless otherwise agreed by the administrations concerned.

**5.409A** The frequency band 2 500-2 690 MHz in Regions 1 and 2, and the frequency band 2 500-2 655 MHz in Region 3 are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). 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. Resolution **218 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply. Such use of HIBS in the frequency bands 2 500-2 510 MHz in Regions 1 and 2, and 2 500-2 535 MHz in Region 3 is limited to reception by HIBS. (WRC-23)

**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)

**5.413** 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)

**5.414A** In Japan and India, the use of the bands 2 500-2 520 MHz and 2 520-2 535 MHz, under No. **5.403**, by a satellite network in the mobile-satellite service (space-to-Earth) is limited to operation within national boundaries and subject to the application of No. **9.11A**. The following pfd values shall be used as a threshold for coordination under No. **9.11A**, for all conditions and for all methods of modulation, in an area of 1 000 km around the territory of the administration notifying the mobile-satellite service network:

$-136$ dB(W/(m <sup>2</sup> · MHz))	for $0^\circ \leq \theta \leq 5^\circ$
$-136 + 0.55 (\theta - 5)$ dB(W/(m <sup>2</sup> · MHz))	for $5^\circ < \theta \leq 25^\circ$
$-125$ dB(W/(m <sup>2</sup> · MHz))	for $25^\circ < \theta \leq 90^\circ$

where  $\theta$  is the angle of arrival of the incident wave above the horizontal plane, in degrees. Outside this area Table **21-4** of Article **21** shall apply. Furthermore, the coordination thresholds in Table 5-2 of Annex 1 to Appendix **5** of the Radio Regulations (Edition of 2004), in conjunction with the applicable provisions of Articles **9** and **11** associated with No. **9.11A**, shall apply to systems for which complete notification information has been received by the Radiocommunication Bureau by 14 November 2007 and that have been brought into use by that date. (WRC-07)

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

**5.415** The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**, giving particular attention to the broadcasting-satellite service in Region 1. (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-19)**. The provisions of No. **5.416** and Table **21-4** of Article 21 of the ITU RR, 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-19)**. 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:

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

where  $\theta$  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  $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 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)

**5.418A** In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix 4 coordination information or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix 4, coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, is considered to have been received before 3 June 200. (WRC-03)

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

**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. **2.22** 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 on a primary basis. (WRC-03)

**5.425** In the band 2 900-3 100 MHz, the use of the ship borne interrogator-transponder system (SIT) shall be confined to the sub-band 2 930-2 950 MHz.

**5.426** The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

**5.427** In the bands 2 900-3 100 MHz and 9 300-9 500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. **4.9**.

**5.428** *Additional allocation:* in Kyrgyzstan and Turkmenistan, the 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, Djibouti, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lao P.D.R., Lebanon, Libya, Malaysia, Mongolia, Myanmar, New Zealand, Oman, Uganda, Pakistan, Palestine\*, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Thailand, Viet Nam and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. Mongolia, New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-23)

**5.429E** *Additional allocation:* in Papua New Guinea, 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-15)

**5.429F** In the following countries in Region 3: Cambodia, India, Indonesia, Lao P.D.R., Pakistan, the Philippines, Singapore and Viet Nam, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-23)**. 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. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. **9.21** with neighbouring countries to protect 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-23)

**5.432** *Different category of service:* in Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the allocation of the band 3 400-3 500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-19)

**5.432A** In Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this 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 band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  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), 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 band 3 400-3 500 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)

**5.432B** Different category of service: in Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, India, Iran (Islamic Republic of), Malaysia, New Zealand, the Philippines, Singapore and Thailand, the frequency band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and 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  $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  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), 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 3 400-3 500 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)

**5.433** In Regions 2 and 3, in the band 3 400-3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

**5.433A** 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, the Dem. People's Rep. of Korea and Singapore, 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  $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  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), 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-23)

**5.435** In Japan, in the band 3 620-3 700 MHz, the radiolocation service is excluded.

**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 (Rev.WRC-23)**. (WRC-23)

**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  $\pm 2$  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)

**5.441B** 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 this frequency band for the implementation of IMT 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 produced by this station does not exceed  $-155 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$  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 criterion is subject to review at WRC-23. See Resolution **223 (Rev. WRC-19)**. 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 standardized 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  $-124.5 \text{ dB(W/m}^2)$  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  $-75 \text{ dBW/MHz}$  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 standardized 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 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 frequency band 5 091-5 150 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-19)**;
- aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution 418 (Rev. WRC-19). (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 fluxdensity at the Earth's surface shall in no case exceed  $-159$  dB(W/m<sup>2</sup>) 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-23)**. (WRC-23)

**5.446B** In the band 5 150-5 250 MHz, stations in the mobile-satellite 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, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia) and 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-12)** \*. These stations shall not claim protection from other stations operating in accordance with Article 5. No. **5.43A** does not apply. (WRC-12)

**5.447** *Additional allocation:* in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. 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) 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  $-164 \text{ dB(W/m}^2\text{)}$  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-23)**. (WRC-23)

**5.448** *Additional allocation:* in Kyrgyzstan, Romania and Turkmenistan, the 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 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, radio 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-23)**. (WRC-23)

**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 allocation:* 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, 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, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the 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)

**5.457** 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 (Rev.WRC-23)**. 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 (Rev.WRC-23)** shall apply. (WRC-23)

**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)

**5.457D** In Cambodia, Lao P.D.R. and the Maldives, the frequency band 6 425-7 025 MHz is identified for 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 **220 (WRC-23)** applies. (WRC-23)

**5.457E** The frequency bands 6 425-7 125 MHz in Region 1 and 7 025-7 125 MHz in Region 3 are identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). 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. Resolution **220 (WRC-23)** applies.

The frequency bands are also used for the implementation of wireless access systems (WAS), including radio local area networks (RLANs). (WRC-23)

**5.458** In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 025 MHz and 7 075-7 250 MHz.

**5.458A** In making assignments in the band 6 700-7 075 MHz to space stations of the fixed-satellite service, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service in the band 6 650-6 675.2 MHz from harmful interference from unwanted emissions.

**5.458B** The space-to-Earth allocation to the fixed-satellite service in the band 6 700-7 075 MHz is limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the band 6 700-7 075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. **22.2**.

**5.459** 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 frequency 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**, with the exception that No. **9.21** shall not apply to the geostationary-satellite networks in the mobile-satellite service for which complete coordination information is received by the Bureau as of 1 January 2025 with respect to non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025. Non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)

**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)

**5.461AC** In the frequency band 7 375-7 750 MHz, non-geostationary-satellite systems operating in the fixed-satellite service for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the maritime mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)

**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 8 025-8 400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following values for angles of arrival ( $\theta$ ), without the consent of the affected administration:

-135 dB(W/m <sup>2</sup> ) in a 1 MHz band	for $0^\circ \leq \theta < 5^\circ$
-135 + 0.5 ( $\theta - 5$ ) dB(W/m <sup>2</sup> ) in a 1 MHz band	for $5^\circ \leq \theta < 5^\circ$
-125 dB(W/m <sup>2</sup> ) in a 1 MHz band	for $25^\circ \leq \theta \leq 90^\circ$ (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 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 radio-navigation 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, Libyan Arab Jamahiriya, Kazakhstan, Kuwait, Lebanon, 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, service 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 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)

**5.484A** The use of the frequency 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), 17.3-17.7 GHz (space-to-Earth) in Region 2, 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. In Region 2, No. **22.2** shall continue to apply in the frequency band 17.3-17.7 GHz. (WRC-23)

**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)

**5.492** Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix **30** may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. (WRC-2000)

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

**5.496A** The frequency band 12.75-13.25 GHz (Earth-to-space) may be used by earth stations in motion, limited to earth stations on aircraft and vessels, communicating with geostationary space stations in the fixed-satellite service. Resolution **121 (WRC-23)** shall apply. (WRC-23)

**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)

**5.499C** 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 frequency 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)

**5.500** *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 1.2m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5m. 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 4.5m, it shall ensure that the power flux-density produced by this earth station does not exceed:

- $-115 \text{ dB(W/(m}^2 \cdot 10 \text{ MHz))}$  for more than 1% of the time produced at 36m above sea level at the low water mark, as officially recognised by the coastal state;
- $-115 \text{ dB(W/(m}^2 \cdot 10 \text{ MHz))}$  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 4.5m, 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)  $4.7D + 28 \text{ dB(W/40 kHz)}$ , where  $D$  is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equals to or greater than 1.2m and less than 4.5m;
  - ii)  $49.2 + 20 \log(D/4.5) \text{ dB(W/40 kHz)}$ , where  $D$  is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5m and less than 31.9m;
  - iii)  $66.2 \text{ dB(W/40 kHz)}$  for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9m;
  - iv)  $56.2 \text{ dB(W/4 kHz)}$  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 4.5m 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 the 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 allocation:* 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 frequency band 14-14.5 GHz, ship earth stations with an equivalent isotropically radiated power (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 (Rev.WRC-23)**. 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-23)

**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 (Rev.WRC-23)** from these countries. (WRC-23)

**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, 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-23)

**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** Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in 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)**), it shall ensure that the power flux-density produced by this earth station does not exceed  $-151.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (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)

**5.510A** The allocation of the frequency band 14.8-15.35 GHz to the space research service on a primary basis is limited to satellite systems operating in the space-to-space, space-to-Earth and Earth-to-space directions at distances from the Earth of less than  $2 \times 10^6$  km in accordance with **Resolution 678 (WRC-23)**. Other uses of the frequency band by the space research service are on a secondary basis. The use of the frequency band 14.8-15.35 GHz by the space research service (space-to-Earth) (Earth-to-space) is on a secondary basis with respect to the terrestrial services in Algeria, Saudi Arabia, Bahrain, Korea (Rep. of), Egypt, the United Arab Emirates, the United States, India, Iraq, Japan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Tunisia and Yemen. (WRC-23)

**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/m<sup>2</sup>) 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)

**5.511G** Stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 15.35-15.4 GHz. The aggregate power flux-density (pfd) received from stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz at any radio astronomy station operating in the frequency band 15.35-15.4 GHz shall be in compliance with the

protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). (WRC-23)

**5.511H** Additional allocation: in Indonesia, the frequency band 15.41-15.7 GHz is also allocated to the aeronautical mobile (OR) service on a secondary basis. Stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 15.35-15.4 GHz. The aggregate power flux-density (pfd) received from stations in the aeronautical mobile (OR) service operating in the frequency band 15.41-15.7 GHz at any radio astronomy station operating in the frequency band 15.35-15.4 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected administration(s). (WRC-23)

**5.512** *Additional allocation:* 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)

**5.515A** In addition to the need to comply with the coordination criteria in Annex **4** to Appendix **30A**, under assumed free-space propagation conditions, the power flux-density of an assignment in the fixed-satellite service (space to-Earth) of a geostationary-satellite network in the frequency band 17.3-17.7 GHz in Region 2 shall not exceed the value of  $-98 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$  at points in the geostationary-satellite orbit with geocentric orbital separation angles between  $152.6^\circ$  and  $162.6^\circ$ . (WRC-23)

**5.515B** In the frequency band 17.3-17.7 GHz, the use of the fixed-satellite service (space-to-Earth) by geostationary-satellite space stations in Region 2 shall not cause harmful interference to space station receivers nor claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A** in all three Regions, 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. The notifying administration for the fixed-satellite service (space-to-Earth), when submitting Appendix **4** information elements, shall provide a firm, objective, actionable, measurable and enforceable commitment that, in the event of harmful interference being

reported to space station receivers in Appendix **30A**, it shall take immediate action to eliminate the interference or reduce it to an acceptable level. (WRC-23)

**5.516** The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

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

- 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 frequency bands by other fixed-satellite service applications or by other services to which these frequency bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the frequency bands. Administrations should take this into account when considering regulatory provisions in relation to these frequency bands. See Resolution **143 (Rev. WRC-19)**. (WRC-19)

**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 (Rev.WRC-23)**. (WRC-23)

**5.517B** The operation of aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) shall be subject to the application of Resolution **123 (WRC-23)**. (WRC-23)

**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 for the broadcasting-satellite service. (WRC-2000)

**5.521A** For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or parts thereof, by space stations in the inter-satellite service, Resolution **679 (WRC-23)** shall apply. Such use is limited to space research, space operation and/or Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space. When using these frequencies, administrations shall ensure that this inter-satellite service is used only for the aforementioned purposes and is not subject to coordination under No. **9.11A**. For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz, 27.5-29.1 GHz and 29.5-30 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites or between non-geostationary satellites and geostationary satellites. For use of the frequency band 29.1-29.5 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites and geostationary satellites. No. **4.10** does not apply. (WRC-23)

**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)

**5.523A** 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** of the Radio Regulations shall continue to apply in the bands 19.3-19.6 GHz and 29.1-29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

**5.523D** The use of the band 19.3-19.7 GHz (space-to-Earth) by geostationary fixed-satellite service systems and by feeder links for non-geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**. The use of this band for other non-geostationary fixed-satellite service systems, or for the cases indicated in Nos. **5.523C** and **5.523E**, is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2**. (WRC-97)

**5.523DA** In order to protect feeder links of non-geostationary networks in the mobile-satellite service in the frequency band 19.3-19.7 GHz, the power flux-density values produced at the surface of the Earth for all angles of arrival by a space station in the inter-satellite service operating in this band in accordance with Resolution **679 (WRC-23)** shall not exceed  $-140$  dB(W/m<sup>2</sup>) in any 1 MHz within 150 km of any of the above feeder-link earth stations recorded in the Master International Frequency Register. (WRC-23)

**5.523E** No. **22.2** of the Radio Regulations shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)

**5.524** *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-

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 (Rev.WRC-23)**. (WRC-23)

**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**.

**5.529A** In the frequency bands 20.2-21.2 GHz and 30-31 GHz, non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC-23)

**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  $-120.4 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  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)

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

**5.531A** The use of the aeronautical mobile (OR) service in the frequency band 22-22.2 GHz is limited to non-safety applications. (WRC-23)

**5.531E** *Alternative allocation:* in Brunei Darussalam, Iran (Islamic Republic of), Malaysia, Singapore and Thailand, the frequency band 22-22.2 GHz is allocated to the mobile, except aeronautical mobile (R), service on a primary basis. The use of the service is limited to non-safety applications within national boundaries. The use of the aeronautical mobile (OR) service in the frequency band 22-22.2 GHz shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations. Furthermore, stations in the aeronautical mobile (OR) service operating in the frequency band 22-22.2 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 22.21-22.5 GHz in other countries in accordance with the Table of Frequency Allocations. The aggregate power flux-density (pfd) received from these stations at any radio astronomy station operating in the frequency band 22.21-22.5 GHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, unless specifically agreed by the affected

administration(s). In order to protect stations of the Earth exploration-satellite service (passive) operating in the frequency band 22.21-22.5 GHz, the unwanted equivalent isotropically radiated power (e.i.r.p.) of stations operating in the aeronautical mobile (OR) service shall not exceed –23 dBW in any 100 MHz band in the frequency band 22.21-22.5 GHz.

Aircraft stations in the aeronautical mobile (OR) service operating in the frequency band 22-22.2 GHz are subject to agreement obtained under **No. 9.21** with respect to the fixed service and shall not cause harmful interference to, nor claim protection from, the fixed service. The following pfd values shall be used as a threshold for coordination under **No. 9.21**:

–110 dB(W/(m <sup>2</sup> · MHz))	for	0° ≤ θ ≤ 12.6°
2.86 θ – 146 dB(W/(m <sup>2</sup> · MHz))	for	12.6° < θ ≤ 15°
0.87 θ – 116 dB(W/(m <sup>2</sup> · MHz))	for	15° < θ ≤ 30°
0.067 θ – 92 dB(W/(m <sup>2</sup> · MHz))	for	30° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

This criterion should be applied at the border of the territory of another administration for any aircraft station located at an altitude of up to 15 km above the ground. In conducting the calculations, the most recent version of Recommendation ITU-R P.525 should be used. (WRC-23)

**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)

**5.532AB** 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 (Rev.WRC-23)** applies. (WRC-23)

**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 coprimary 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 (Rev.WRC-23)** applies. (WRC-23)

**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, Türkiye, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Somalia, Sudan, Sweden, Tanzania, 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 (Rev.WRC-23)** applies. (WRC-23)

**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), Djibouti, 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, Palestine\*, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the frequency 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-23)

**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 (Rev.WRC-23)**. (WRC-23)

**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)

**5.547** The frequency 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. 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 frequency 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-23)

**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)

**5.547D** 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)

**5.548** In designing systems for the inter-satellite service in the frequency band 32.3-33 GHz, for the radionavigation service in the frequency band 32-33 GHz, and for the space research service (deep space) in the frequency 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 (Rev.WRC-23)**). (WRC-23)

**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/m<sup>2</sup>) in this band. (WRC-03)

**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 (Rev.WRC-23)** applies. (WRC-23))

**5.550C** The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.250.2 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)

**5.550CA** Non-geostationary-satellite systems in the fixed-satellite service operating with an apogee altitude above 407 km and below 2 000 km in the frequency band 37.5-38 GHz shall not exceed an unwanted emission e.i.r.p. density of  $-21$  dB(W/100 MHz) per space station for angles greater than  $65.0^\circ$  from nadir relative to the space station in the fixed-satellite service in the frequency band 36-37 GHz in order to protect the Earth exploration-satellite service (passive) operating in the latter frequency band. (WRC-23)

**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 (Rev.WRC-23)**. (WRC-23)

**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 (space-to-Earth), 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/m<sup>2</sup>) in 1 GHz and  $-246$  dB(W/m<sup>2</sup>) in any 500 kHz of the frequency band 42.5-3.5 GHz at the site of any radio astronomy station registered as a single-dish telescope;

And

- $-209$  dB(W/m<sup>2</sup>) 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  $\theta_m$  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 operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station:

- $-137 \text{ dB(W/m}^2\text{)}$  in 1 GHz and  $-153 \text{ dB(W/m}^2\text{)}$  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
- $-116 \text{ dB(W/m}^2\text{)}$  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, Djibouti, Egypt, 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, Somalia, 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 (Rev.WRC-23)** applies. (WRC-23)

**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 (Rev.WRC-23)** applies. (WRC-23)

**5.554** In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, 191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service. (WRC-2000)

**5.555** *Additional allocation:* the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. (WRC-2000)

**5.555C** 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  $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$  for all angles of arrival. (WRC-97)

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

**5.557** *Additional allocation:* in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (WRC-97)

**5.557A** In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to  $-26 \text{ dB(W/MHz)}$ . (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  $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$  for all angles of arrival. (WRC-97)

**5.559** In the band 59-64 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **5.43**). (WRC-2000).

**5.559AA** 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 (Rev.WRC-23)** applies. (WRC-23)

**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 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 1000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed  $-148 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for all angles of arrival. (WRC-2000)

**5.562D** *Additional allocation:* In Korea (Rep. of), the 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  $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for all angles of arrival. (WRC-2000)

**5.563A** In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. (WRC-2000)

**5.563AA** In the frequency band 235-238 GHz, stations in the Earth exploration-satellite service (passive) shall not claim protection from stations in the fixed and mobile services. (WRC-23)

**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-23)**.

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-23)**.

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-23)

**5.565** The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service 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 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 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 275-1 000 GHz frequency range. All frequencies in the range 1000-3 000 GHz may be used by both active and passive services. (WRC-12)

Vanuatu National Table of Frequency Allocations (NTFA)