Botswana Radio Frequency Plan, 2004

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PART 1 - PRELIMINARY

1. Introduction

The basis for the Botswana Radio Frequency Band Plan is Section 43 of the Telecommunications Act, 1996 [No. 15 of 1996] and Article 5 of the International Telecommunication Union (ITU) Radio Regulations. The ITU Radio Regulations are annexed to the ITU Convention and are revised by the ITU World Radiocommunication Conference, normally held every three years. The Botswana frequency allocations are broadly in consonance with the ITU requirements for Region 1, within which Botswana falls under

2. Definitions

In these regulations, unless the context otherwise requires,

"Act" refers to the Telecommunications Act No. 15 of 1996.

"**Administration**" means a government or public authority of a country that is responsible for giving effect to the obligations of the country as a member of International Telecommunications Union (ITU). Botswana Telecommunication Authority (BTA) is the Botswana administration.

"Additional Allocation" means an allocation, in the form of Footnote, which is added in this area or in this country to the services or services which are indicated in Table of Frequency allocation.

"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 (OR) service" means an aeronautical mobile service for communications, including those relating to flight coordination, primarily outside national or international civil air routes. (OR) means off-route.

"Aeronautical mobile (R) service" means an aeronautical mobile service that is reserved for communications relating to the safety and

regularity of flight, primarily along national or international civil air routes. (R) means route.

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

"Aeronautical Mobile – Satellite Service" means 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.

"Allocation" (of a frequency band) means entry In the Table of Frequency Allocation 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.

"Alternative allocation" means an allocation in the form of footnote which replaces, in this area or in this area country, the allocation indicated in the Table of Frequency Allocation.

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

"Amateur – Satellite Service" means a radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

"Assignment" (of a radio frequency or radio frequency channel) means authorisation given by the Authority for a radio device to use a radio frequency or radio frequency channel under specified conditions.

"Authority" refers to the Telecommunications Authority as established by the Telecommunications Act No.15 of 1996.

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

"Broadcasting – Satellite Service" means 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.

"Deep Space" means a space at a distance from the Earth approximately equal to, or greater than, the distance between the earth and the moon.

"Earth Exploration – Satellite Service" means 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 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.

"Emergency Position – Indicating Radiobeacon Station" means a station in the mobile service the emissions of which are intended to facilitate search and rescue operations.

"Fixed Service" means a radiocommunication service between specified fixed points.

"Fixed – Satellite Service" means a radiocommunication service between earth stations at specified fixed points when one or more satellites are used; in some cases this service includes satellite-to-satellite links, which may also be effected in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services.

"Inductive Loop Systems" means systems, which operate by producing a controlled magnetic field within which a predetermined recognisable signal is formed.

"Industrial, Scientific and Medical (ISM) applications (of radio frequency energy)" means 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.

"Instrument Landing System (ILS)" means 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.

"Inter – Satellite Service" means a radiocommunication service providing links between artificial earth satellites.

"Land Mobile Service" means a mobile radiocommunication service between base stations and land mobile stations or between land mobile stations.

"Maritime Mobile Service" means 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" means 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.

"Meteorological Aids Service" means a radiocommunication service used for meteorological, including hydrological, observations and exploration.

"Meteorological – Satellite Service" means an earth exploration satellite service for meteorological purposes.

"Mobile – Satellite Service" means 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.

"Primary Services" means where a band is indicated as allocated to more than one service and the name of the service printed in Capital characters (e.g. MOBILE) is the primary services.

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

"Radar Beacon (Racon)" means 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.

"Radio Astronomy" means astronomy based on the reception of radio waves of cosmic origin.

"Radio Astronomy Service" means a service involving the use of radio astronomy.

"Radiocommunications Service" means a service involving the transmission, emission and/or reception of radio waves for specific telecommunications purposes.

"Radiodetermination" means 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" means radiodetermination used for the purposes of radionavigation, including obstruction warning.

"Radiolocation" means radiodetermination used for purposes other than radionavigation.

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

"Safety Service" means any radiocommunication service used permanently or temporarily for the safeguarding of human life and property.

"Secondary Service" means where a band is indicated as allocated to more than one service and the name of the service printed in normal characters (e.g. Mobile). These are called secondary services. Stations of a secondary service shall:

- not cause harmful interference to stations of primary services to which the frequencies are already assigned or to which stations may be assigned at a later date,
- not 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,
- 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.

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

"Standard frequency and Time Signal Service" means 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"** means a radiocommunication service using space stations on earth satellites for the same purpose as those of the standard frequency and time signal service.

3. Interpretation of table of frequency allocations

The table of frequency allocations presents the band plan for the future and present use of the radio spectrum in Botswana between 9 kHz and 105 GHz. The spectrum has been divided into frequency bands within which certain designated radiocommunication services may operate.

3.1 Frequency bands are shown in increasing frequency orders from 9 kHz to 105 GHz.

3.2 Column 1 indicates the frequency bands for the allocations.

3.3 Column 2 of the Table of frequency allocations refer to the ITU Region 1 Radio Regulations and the allocation of frequency bands to radiocommunication services, and is shown for information only.

3.4 Column 3 is the National Allocation Column and it indicates the Botswana National Allocations. The National Allocations are also divided into Primary and Secondary Services. In most instances they are identical to the ITU Region 1 allocations, unless where the national footnotes describe other uses of the band or the region allocations are not suitable for Botswana (e.g. some maritime services).

3.5 Column 4 indicates the main utilizations in Botswana. The column indicates the main service to which the band is allocated or the main service that presently uses the band. It does not mean that the service has exclusivity to the frequency and it is presented here mainly as a guideline. BTA might make changes to the main service depending on technical possibilities of sharing frequencies. In some cases the future use of the spectrum is so uncertain that the column is left blank. This is the case for many frequency bands above 60 GHz.

3.6 Column 5 is the frequency band/mid frequency column which gives specific details about services using the band and mid frequency where appropriate.

3.7 Column 6 is the Duplex Band column, which presents duplex bands used by the services mentioned in the previous column. It is mostly relevant to mobile services.

3.8 Column 7 is the Remark column which indicates several items such as; the name of the service that presently uses the band, future requirements in the band, name of the channel plan that is used/will be used for the band, indication of the national footnotes for migration etc.

PART II - TABLE OF FREQUENCY ALLOCATIONS

4.0 Table of Frequency Allocations

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
Below 3 000 kHz (VLF, LF, MF, HF)						
Below 9	Not allocated 5.53 5.54	Not allocated 5.53 5.54	Not allocated			
9 – 14	RADIONAVIGATION	RADIONAVIGATION	RADIONAVIGATION			
14 – 19.95	FIXED MARITIME MOBILE 5.57 5.55 5.56	FIXED MARITIME MOBILE 5.57 5.55 5.56	FIXED MARITIME MOBILE			
19.95 – 20.05	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)			
20.05 – 70	FIXED MARITIME MOBILE 5.57 5.56 5.58	FIXED MARITIME MOBILE 5.57 5.56 5.58	FIXED MARITIME MOBILE			
70 – 72	RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	RADIONAVIGATION			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
72 – 84	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	FIXED MARITIME MOBILE RADIONAVIGATION			
84 – 86	RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	RADIONAVIGATION 5.60			
86 – 90	FIXED MARITIME MOBILE 5.57 5.56 RADIONAVIGATION	FIXED MARITIME MOBILE 5.57 5.56 RADIONAVIGATION	FIXED MARITIME MOBILE RADIONAVIGATION			
90 – 110	RADIONAVIGATION 5.62 Fixed 5.63 5.64	RADIONAVIGATION 5.62 Fixed 5.63 5.64	RADIONAVIGATION Fixed			Positioning systems such as Decca and Loran-C might be used in this band.
110 – 112	FIXED MARITIME MOBILE RADIONAVIGATION 5.64	FIXED MARITIME MOBILE RADIONAVIGATION 5.64	FIXED MARITIME MOBILE RADIONAVIGATION			
112 – 115	RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	RADIONAVIGATION			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
115 – 117.6	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	RADIONAVIGATION Fixed Maritime mobile			
117.6 – 126	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED MARITIME MOBILE RADIONAVIGATION			
126 – 129	RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	RADIONAVIGATION			
129 – 130	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED MARITIME MOBILE RADIONAVIGATION			
130 – 148.5	FIXED MARITIME MOBILE 5.64 5.67	FIXED MARITIME MOBILE 5.64 5.67	FIXED MARITIME MOBILE			
148.5 – 255	BROADCASTING 5.68 5.69 5.70	BROADCASTING 5.68 5.69 5.70	BROADCASTING			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
255 – 283.5	BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70 5.71	BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70 5.71	BROADCASTING AERONAUTICAL RADIONAVIGATION			Aeronautical Radio Beacons.
283.5 – 315	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (RADIOBEACON) 5.73 5.72 5.74	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (RADIOBEACON) 5.73 5.72 5.74	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (RADIOBEACON)			Aeronautical Radio Beacons.
315 – 325	AERONAUTICAL RADIONAVIGATION Maritime Radionavigation (RADIOBEACON) 5.73 5.72 5.75	AERONAUTICAL RADIONAVIGATION Maritime Radionavigation (RADIOBEACON) 5.73 5.72 5.75	AERONAUTICAL RADIONAVIGATION Maritime Radionavigation (RADIOBEACON)			Aeronautical Radio Beacons.
325 –405	AERONAUTICAL RADIONAVIGATION 5.72	AERONAUTICAL RADIONAVIGATION 5.72	AERONAUTICAL RADIONAVIGATION			Aeronautical Radio Beacons.
405 – 415	RADIONAVIGATION 5.76 5.72	RADIONAVIGATION 5.76 5.72	RADIONAVIGATION			Aeronautical Radio Beacons.

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
415 – 435	MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72	MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72	MARITIME MOBILE AERONAUTICAL RADIONAVIGATION			Aeronautical Radio Beacons.
435 – 495	MARITIME MOBILE 5.79 Aeronautical Radionavigation 5.72 5.82	MARITIME MOBILE 5.79 Aeronautical Radionavigation 5.72 5.82	MARITIME MOBILE Aeronautical Radionavigation			Aeronautical Radio Beacons.
495- 505	MOBILE (distress and calling) 5.83	MOBILE (distress and calling) 5.83	MOBILE (distress and calling)			
505 – 526.5	MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION 5.72	MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION 5.72	MARITIME MOBILE AERONAUTICAL RADIONAVIGATION			
526.5 – 1606.6	BROADCASTING 5.87 5.87A	BROADCASTING 5.87	BROADCASTING			AM broadcasting stations.
1606.5 – 1625	FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	FIXED MARITIME MOBILE LAND MOBILE			
1625 – 1635	RADIOLOCATION 5.93	RADIOLOCATION 5.93	RADIOLOCATION			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
1635 – 1800	FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	FIXED MARITIME MOBILE LAND MOBILE			
1800 - 1810	RADIOLOCATION 5.93	RADIOLOCATION 5.93	RADIOLOCATION			
1810 – 1850	AMATEUR 5.99 5.100 5.101	AMATEUR 5.99 5.100 5.101	AMATEUR			
1850 – 2000	FIXED MOBILE except aeronautical mobile 5. 92 5.96 5.103	FIXED MOBILE except aeronautical mobile 5. 92 5.96 5.103	FIXED MOBILE except aeronautical mobile			
2000 – 2025	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103	FIXED MOBILE except aeronautical mobile(R)			
2025 – 2045	FIXED MOBILE except aeronautical mobile(R) Meteorological Aids 5.104 5.92 5.103	FIXED MOBILE except aeronautical mobile(R) Meteorological Aids 5.104 5.92 5.103	FIXED MOBILE except aeronautical mobile(R) Meteorological Aids			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
2045 – 2160	FIXED MARITIME MOBILE LAND MOBILE 5.92	FIXED MARITIME MOBILE LAND MOBILE 5.92	FIXED MARITIME MOBILE LAND MOBILE			
2160 – 2170	RADIOLOCATION 5.93 5.107	RADIOLOCATION 5.93 5.107	RADIOLOCATION			
2170 – 2173.5	MARITIME MOBILE	MARITIME MOBILE	MARITIME MOBILE			
2173.5 – 2190.5	MOBILE(distress and calling) 5.109 5.110 5.111	MOBILE(distress and calling) 5.109 5.110 5.111	MOBILE(distress and calling)			
2190.5 – 2194	MARITIME MOBILE	MARITIME MOBILE	MARITIME MOBILE			
2194 – 2300	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103 5.112	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103 5.112	FIXED MOBILE except aeronautical mobile(R)			
2300 – 2498	FIXED MOBILE except aeronautical mobile(R) BROADCASTING 5.113 5.103	FIXED MOBILE except aeronautical mobile(R) BROADCASTING 5.113 5.103	FIXED MOBILE except aeronautical mobile(R) BROADCASTING			
2498 – 2501	STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
2501 – 2502	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research			
2502 – 2625	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103 5.114	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103 5.114	FIXED MOBILE except aeronautical mobile(R)			
2625 – 2650	MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	MARITIME MOBILE MARITIME RADIONAVIGATION			
2650 – 2850	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103	FIXED MOBILE except aeronautical mobile(R) 5.92 5.103	FIXED MOBILE except aeronautical mobile(R)			
2850 – 3025	AERONAUTICAL MOBILE(R) 5.111 5.115	AERONAUTICAL MOBILE(R) 5.111 5.115	AERONAUTICAL MOBILE(R)			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
3 to 30 MHz (HF)						
3025 – 3155	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
3155 – 3200	FIXED MOBILE except aeronautical (R) 5.116 5.117	FIXED MOBILE except aeronautical (R) 5.116	FIXED MOBILE except aeronautical (R)			
3200 – 3230 kHz	FIXED MOBILE except aeronautical (R) Broadcasting 5.113 5.116	FIXED MOBILE except aeronautical (R) Broadcasting 5.113 5.116	FIXED MOBILE except aeronautical (R) Broadcasting			
3230 – 3400	FIXED MOBILE except aeronautical BROADCASTING 5.113 5.116 5.118	FIXED MOBILE except aeronautical BROADCASTING 5.113 5.116	FIXED MOBILE except aeronautical BROADCASTING			
3400 – 3500	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
3500 – 3800	AMATEUR FIXED MOBILE except aeronautical mobile 5.92	AMATEUR FIXED MOBILE except aeronautical mobile 5.92	AMATEUR FIXED MOBILE except aeronautical mobile			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
3800 – 3900	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE			
3900 – 3950	AERONAUTICAL MOBILE(OR) 5.123	AERONAUTICAL MOBILE(OR) 5.123	AERONAUTICAL MOBILE(OR)			
3950 – 4000	FIXED BROADCASTING	FIXED BROADCASTING	FIXED BROADCASTING			
4000 – 4063	FIXED MARITIME MOBILE 5.127 5.126	FIXED MARITIME MOBILE 5.127	FIXED			
4063 – 4438	MARITIME MOBILE 5.79A 5.109 5110 5.130 5.131 5.132 5.128 5.129	MARITIME MOBILE 5.109 5110 5.130 5.131 5.132 5.128 5.129				
4438 – 4650	FIXED MOBILE except aeronautical mobile(R)	FIXED MOBILE except aeronautical mobile(R)	FIXED MOBILE except aeronautical mobile(R)			
4650 – 4700	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
4700 – 4750	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
4750 – 4850	FIXED AERONAUTICAL MOBILE(OR) LANDMOBILE BROADCASTING 5.113	FIXED AERONAUTICAL MOBILE(OR) LANDMOBILE BROADCASTING 5.113	FIXED AERONAUTICAL MOBILE(OR) LANDMOBILE BROADCASTING			
4850 – 4995	FIXED LAND MOBILE BROADCASTING 5.113	FIXED LAND MOBILE BROADCASTING 5.113	FIXED LAND MOBILE BROADCASTING			
4995 – 5003	STANDARD FREQUENCY AND TIME (5000 kHz)	STANDARD FREQUENCY AND TIME (5000 kHz)	STANDARD FREQUENCY AND TIME (5000 kHz)			
5003 – 5005	STANDARD FREQUENCY AND TIME Space Research	STANDARD FREQUENCY AND TIME Space Research	STANDARD FREQUENCY AND TIME Space Research			
5005 – 5060	FIXED BROADCASTING 5.113	FIXED BROADCASTING 5.113	FIXED BROADCASTING			
5060 – 5250	FIXED Mobile except aeronautical mobile 5.133	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile			
5250 – 5450	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
5450 – 5480	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE(OR) LAND MOBILE			
5480 – 5680	AERONAUTICAL MOBILE(R) 5.111 5.115	AERONAUTICAL MOBILE(R) 5.111 5.115	AERONAUTICAL MOBILE(R)			
5680 – 5730	AERONAUTICAL MOBILE(OR) 5.111 5.115	AERONAUTICAL MOBILE(OR) 5.111 5.115	AERONAUTICAL MOBILE(OR)			
5730 – 5900	FIXED LAND MOBILE	FIXED LAND MOBILE	FIXED LAND MOBILE			
5900 – 5950	BROADCASTING 5.134 5.136	BROADCASTING 5.134 5.136	BROADCASTING Fixed Land Mobile			Existing fixed assignments on a no interference basis to broadcasting after 2007.
5950 – 6200	BROADCASTING	BROADCASTING	BROADCASTING			
6200 – 6525	MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	MARITIME MOBILE			
6525 – 6685	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
6685 – 6765	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
6765 – 7000	FIXED Land Mobile 5.139 5.138	FIXED Land Mobile 5.138	FIXED Land Mobile 5.138			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
7000 – 7100	AMATEUR AMATEUR-SATELLITE 5.140 5.141	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			
7100 –7300	BROADCASTING	BROADCASTING	BROADCASTING			
7300 – 7350	BROADCASTING 5.134 5.143	BROADCASTING 5.134 5.143	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
7350 –8100	FIXED Land Mobile 5.144	FIXED Land Mobile	FIXED Land Mobile			
8100 –8195	FIXED MARITIME MOBILE	FIXED MARITIME MOBILE	FIXED MARITIME MOBILE			
8195 – 8815	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	MARITIME MOBILE			
8815 – 8965	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
8965 – 9040	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
9040 – 9400	FIXED	FIXED	FIXED			
9400 – 9500	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
9500 – 9900	BROADCASTING 5.147 5.148	BROADCASTING 5.147 5.148	BROADCASTING			
9900 – 9995	FIXED	FIXED	FIXED			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
9995 – 10 003	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)			
10 003 – 10 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space Research			
10 005 – 10 100	AERONAUTICAL MOBILE(R) 5.111	AERONAUTICAL MOBILE(R) 5.111	AERONAUTICAL MOBILE(R)			
10 100 – 10 150	FIXED Amateur	FIXED Amateur	FIXED Amateur			
10 150 – 11 175	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)			
11 175 – 11 275	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
11 275 – 11 400	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
11 400 – 11 600	FIXED	FIXED	FIXED			
11 600 – 11 650	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
11 650 - 12 050	BROADCASTING 5.147	BROADCASTING 5.147	BROADCASTING			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
12 050 – 12 100	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
12 100 – 12 230	FIXED	FIXED	FIXED			
12 230 – 13 200	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE			
13 200 – 13 260	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
13 260 – 13 360	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
13 360 – 13 410	FIXED RADIO ASTRONOMY 5.149	FIXED RADIO ASTRONOMY 5.149	FIXED RADIO ASTRONOMY			
13 410 – 13 570	FIXED Mobile except aeronautical mobile(R) 5.150	FIXED Mobile except aeronautical mobile(R) 5.150	FIXED Mobile except aeronautical mobile(R)	13 410 – 13 570		ISM band
13 570 – 13 600	BROADCASTING 5.134 5.151	BROADCASTING 5.134 5.151	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
13 600 – 13 800	BROADCASTING	BROADCASTING	BROADCASTING			
13 800 – 13 870	BROADCASTING 5.134 5.151	BROADCASTING 5.134 5.151	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
13 870 – 14 000	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)			
14 000 – 14 250	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
14 250 – 14 350	AMATEUR 5.152	AMATEUR 5.152	AMATEUR			
14 350 – 14 990	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)			
14 990 – 15 005	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz)			
15 005 - 15 100	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research			
15 010 – 15 100	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
15 100 – 15 600	BROADCASTING	BROADCASTING	BROADCASTING			
15 600 – 15 800	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
15 800 – 16 360	FIXED 5.153	FIXED	FIXED			
16 360 – 17 410	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE			
17 410 – 17 480	FIXED	FIXED	FIXED			
17 480 – 17 550	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
17 550 – 17 900	BROADCASTING	BROADCASTING	BROADCASTING			
17 900 – 17 970	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
17 970 – 18 030	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)	AERONAUTICAL MOBILE(OR)			
18 030 – 18 052	FIXED	FIXED	FIXED			
18 052 – 18 068	FIXED Space Research	FIXED Space Research	FIXED Space Research			
18 068 – 18 168	AMATEUR AMATEUR-SATELLITE 5.154	AMATEUR AMATEUR-SATELLITE 5.154	AMATEUR AMATEUR-SATELLITE			
18 168 – 18 780	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile			
18 780 – 18 900	MARITIME MOBILE	MARITIME MOBILE	MARITIME MOBILE			
18 900 – 19 020	BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.135 5.146	BROADCASTING			Existing fixed assignments on a no interference basis to broadcasting after 2007.
19 020 – 19 680	FIXED	FIXED	FIXED			
19 680 – 19 800	MARITIME MOBILE 5.132	MARITIME MOBILE 5.132	MARITIME MOBILE			
19 800 – 19 990	FIXED	FIXED	FIXED			
19 990 – 19 995	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space Research			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
19 995 – 20 010	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)			
20 010 – 21 000	FIXED Mobile	FIXED Mobile	FIXED Mobile			
21 000 – 21 450	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			
21 450 – 21 850	BROADCASTING	BROADCASTING	BROADCASTING			
21 850 – 21 870	FIXED 5.155A 5.155	FIXED	FIXED			
21 870 – 21 924	FIXED 5.155B	FIXED	FIXED			
21 924 - 22 000	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)	AERONAUTICAL MOBILE(R)			
22 000 – 22 855	MARITIME MOBILE 5.132 5.156	MARITIME MOBILE 5.132	MARITIME MOBILE			
22 855 – 23 000	FIXED 5.156	FIXED	FIXED			
23 000 – 23 200	FIXED Mobile except aeronautical mobile(R) 5.156	FIXED Mobile except aeronautical mobile(R)	FIXED Mobile except aeronautical mobile(R)			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
23 200 – 23 350	FIXED 5.156A AERONAUTICAL MOBILE(OR)	FIXED 5.156A AERONAUTICAL MOBILE(OR)	FIXED AERONAUTICAL MOBILE(OR)			
23 350 – 24 000	FIXED Mobile except aeronautical mobile 5.157	FIXED Mobile except aeronautical mobile 5.157	FIXED Mobile except aeronautical mobile			
24 000 – 24 890	FIXED LAND MOBILE	FIXED LAND MOBILE	FIXED LAND MOBILE			
24 890 – 24 990	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			
24 990 – 25 005	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)			
25 005 – 25 010	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research			
25 010 – 25 070	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile			
25 070 – 25 210	MARITIME MOBILE	MARITIME MOBILE	MARITIME MOBILE			
25 210 –25 550	FIXED MOBILE except aeronautical	FIXED MOBILE except aeronautical	FIXED MOBILE except aeronautical			

Frequency bands (kHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilities in Botswana	Frequ. bands Mid Frequ. (kHz)	Duplex bands (kHz)	Remarks
25 550 – 25 670	RADIO ASTRONOMY 5.149	RADIO ASTRONOMY 5.149	RADIO ASTRONOMY			
25 670 – 26 100	BROADCASTING	BROADCASTING	BROADCASTING			
26 100 – 26 175	MARITIME MOBILE 5.132	MARITIME MOBILE 5.132	MARITIME MOBILE			
26 175 – 27 500	FIXED MOBILE except aeronautical 5.150	FIXED MOBILE except aeronautical 5.150	LANDMOBILE	26 600 –26 650 26 690 –26 820 26 820 –27 200 26 960 –27 410 26 957- 27 283		Paging Paging Remote control and telemetry Citizen Band (excluding 26.995,27.045, 27.095,27.145,27.195 MHz) ISM band
27 500 – 28 000	METEOROLOGICAL AIDS FIXED MOBILE	METEOROLOGICAL AIDS FIXED MOBILE	METEOROLOGICAL AIDS FIXED MOBILE			
28 000 – 29 700	AMATEUR AMATEUR SATELLITE	AMATEUR AMATEUR SATELLITE	AMATEUR AMATEUR SATELLITE			
29 700 – 30 005	FIXED MOBILE	FIXED MOBILE	FIXED LANDMOBILE	29 700 – 30 005		10 kHz channel separation 10 kHz channel separation

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
30 MHz - 300 MHz						
30.005 - 30.010	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	SPACE OPERATION (satellite identification) FIXED LANDMOBILE SPACE RESEARCH	30.005 – 30.010		10 kHz channel separation 10 kHz channel separation
30.01 - 37.50	FIXED MOBILE	FIXED MOBILE	FIXED LANDMOBILE	30.000 - 30.325 30.325 – 35.000 35.000 – 35.250 35.250 – 40.000		Telemetry and Remote control Model Aircraft Control
37.50 - 38.25	FIXED MOBILE Radio Astronomy 5.149	FIXED MOBILE Radio Astronomy 5.149	FIXED LANDMOBILE	36.000 –40.000		
38.250 - 39.986	FIXED MOBILE	FIXED MOBILE	FIXED LANDMOBILE	36.000 –40.000		
39.986 - 40.020	FIXED MOBILE Space Research	FIXED MOBILE Space Research	FIXED LANDMOBILE			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
40.02 - 40.98	FIXED MOBILE 5.150	FIXED MOBILE 5.150	FIXED LANDMOBILE	40.000 – 40.600 40.600 – 41.000 40.660 - 40.700		Telemtry and Remote control ISM
40.980 - 41.015	FIXED MOBILE Space Research 5.160	FIXED MOBILE Space Research 5.160	FIXED LANDMOBILE			
41.015 - 44.000	FIXED MOBILE 5.160 5.161	FIXED MOBILE 5.160	FIXED LANDMOBILE AERONAUTICAL RADIONAVIGATION	41.000 – 44.000 42.400 - 43.600 41.000 - 44.000		Wireless microphone
44.0 – 47.0	FIXED MOBILE 5.162 5.162A	FIXED MOBILE 5.162 5.162A	FIXED LANDMOBILE	45.600 - 46.750 46.670 – 46.970		CT0FB

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
47 – 68 MHz	BROADCASTING 5.162A 5.163 5.164 5.165 5.169 5.171	BROADCASTING 5.165 5.169 5.171	BROADCASTING AMATEUR 5.169 FIXED LANDMOBILE 5.171	50.000 – 54.000 47.000 – 49.670 49.670 – 49.970 49.970 – 63.000 53.000 – 54.000 63.000 - 68.000	49.670 – 49.970	Television, Band I (ch 2-4). ST61 CT0 ML Wireless microphone
68.00 – 74.80	FIXED MOBILE except Aeronautical 5.174 5.175 5.177 5.179	FIXED MOBILE except Aeronautical 5.149	FIXED LANDMOBILE	68.000 – 69.250 69.250 – 70.000 70.000 – 70.975 70.975 – 71.475 71.475 – 72.525 72.525 – 73.425 73.425 - 74.800	76.175 – 76.925 75.200 – 76.175 76.925 – 77.975 78.625 – 80.000	FBML 1 FB 1 6.925 MHz duplex FB 2 5.200 MHz duplex FBML 2 FB 3 5.450 MHz duplex FBML 3 FB 4 5.200 MHz duplex
74.8 - 75.2	AERONAUTICAL RADIONAVIGATION 5.180 5.181	AERONAUTICAL RADIONAVIGATION 5.180	AERONAUTICAL RADIONAVIGATION	75.000		Marker Beacons ICAO SARP

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
75.2 – 87.5 MHz	FIXED	FIXED	FIXED			
	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	LANDMOBILE	75.200 – 76.175	70.000 – 70.975	ML 2 5.200 MHz duplex
	5.179 5.184			76.175 – 76.925	69.250 – 70.000	ML 1 6.925 MHz duplex
	5.187			76.925 – 77.975	71.425 – 72.525	ML 3 5.500 MHz duplex
				77.975 – 78.625	82.975 – 83.625	FB 5 5,000 MHz duplex
				78.625 – 80.000	73.425 – 74.800	ML 4 5.2000 MHz duplex
				80.000 – 80.500	87.000 – 87.500	FB 6 7.000 MHz duplex
				80.500 – 81.000		FBML 4
				81.000 – 81.625	86.375 – 87.000	FB 7 5.375 MHz duplex
				81.625 – 82.975	85.025 – 86.375	FB 8 3.400 MHz duplex
				82.975 – 83.625	77.975 – 78.625	ML 5 5.000 MHz duplex
				83.625 – 85.025		FBML 5
				85.025 – 86.375	81.625 – 82.975	ML 8 3.400 MHz duplex
				86.375 – 87.000	81.000 – 81.625	ML 7 5.375 MHz duplex
				87.000 – 87.500	80.000 – 80.500	ML 6 7.000 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
87.5 - 100.0	BROADCASTING 5.190	BROADCASTING	BROADCASTING	87.500 – 108.000		FM broadcasting. GE84
100 - 108	BROADCASTING 5.192 5.194	BROADCASTING	BROADCASTING	87.500 – 108.000		FM broadcasting. GE84
108.000 - 117.975	AERONAUTICAL RADIONAVIGATION 5.197	AERONAUTICAL RADIONAVIGATION 5.197	AERONAUTICAL RADIONAVIGATION	108.000 – 117.975		ILS and VOR ICAO SARP
117.975 – 137.000	AERONAUTICAL MOBILE (R) 5.111 5.198 5.199 5.200 5.201 5.202 5.203 5.203A 5.203B	AERONAUTICAL MOBILE (R) 5.111 5.198 5.199 5.200 5.203A	AERONAUTICAL MOBILE (R) Fixed	117.975 – 136.000 121.725		Test and demonstration

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
137.000 - 137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except Aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except Aeronautical mobile (R) 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except Aeronautical mobile (R)			
137.025 - 137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) 5.208A 5.209 Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) S5.208A S5.209 Fixed Mobile except aeronautical mobile (R) 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) Fixed Mobile except aeronautical mobile (R)			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
137.175 - 137.825	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)			Downlink. Analogue signal (NOAA)
137.825 - 138.000	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-Satellite (space-to-Earth) 5.208A 5.209 Mobile except aeronautical mobile (R) 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-Satellite (space-to-Earth) 5.208A 5.209 Mobile except aeronautical mobile (R) 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-Satellite (space-to-Earth) Mobile except aeronautical mobile (R)			Downlink. Analogue signal (Meteor)

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
138.0 - 143.6	AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	AERONAUTICAL MOBILE (OR) 5.212	AERONAUTICAL MOBILE (OR) Fixed MOBILE	 138.000 – 138.500 138.500 – 138.700 138.700 – 143.500	 143.500 – 143.700	 Alarms (P-MP) Alarms (P-MP), 5 MHz duplex FBML 1
143.60 - 143.65	AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-Earth) 5.211 5.212 5.214	AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-Earth) 5.212	AERONAUTICAL MOBILE (OR) Fixed MOBILE	 143.500 – 143.700	 138.500 – 138.700	 Alarms (P-MP), 5 MHz duplex
143.65 - 144.00	AERONAUTICAL MOBILE (OR) 5.211 5.212 5.214	AERONAUTICAL MOBILE (OR) 5.212	AERONAUTICAL MOBILE (OR) Fixed MOBILE	143.500 – 143.700 143.700 – 144.000	138.500 – 138.700	Alarms (P-MP), 5 MHz duplex FBML 2
144 - 146	AMATEUR AMATEUR-SATELLITE 5.216	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	144.000 – 146.000		
146.0 – 148.0	FIXED MOBILE except aeronautical mobile (R)	FIXED MOBILE except aeronautical mobile (R)	LAND MOBILE Fixed	146.000 - 146.200 146.200 – 148.000	 151.200 – 153.000	FBML 3 ML 1, 5 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
148.0 – 149.9	FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	LAND MOBILE Fixed MOBILE-SATELLITE (Earth-to-space)	148.000 - 149.900 148.000 – 149.500		FBML 4 MSS (WARC-92)
149.90 - 150.05	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION – SATELLITE	149.900 – 150.050		MSS (WARC-92)
150.05 - 153.00	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	LAND MOBILE Fixed RADIO ASTRONOMY	150.050 – 151.000 151.000 – 151.200 151.200 – 153.000	146.200 – 148.000	Paging Alarm FB 1, 5 MHz duplex
153 - 154	FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	LAND MOBILE Fixed Meteorological aids	153.000 – 155.000	158.000 – 160.000	ML 2, 5 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
154.0 – 156.7625	FIXED MOBILE except aeronautical mobile (R) 5.226 5.227	FIXED MOBILE except aeronautical mobile (R) 5.226 5.227	LAND MOBILE Fixed	153.000 – 155.000 155.000 – 155.500 155.500 – 157.500	158.000 – 160.000 160.500 – 162.500	ML 2, 5 MHz duplex FBML 5 ML 3, 5 MHz duplex
156.7625 - 156.8375	MARITIME MOBILE (distress and calling) 5.211 5.226	MARITIME MOBILE (distress and calling) 5.211 5.226	LAND MOBILE Fixed	155.500 – 157.500	160.500 – 162.500	ML 3, 5 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
156.8375 - 174.0000	FIXED MOBILE except Aeronautical mobile 5.226 5.229	FIXED MOBILE except Aeronautical mobile 5.226	MOBILE Fixed	155.500 – 157.500	160.500 – 162.500	ML 3, 5 MHz duplex
				157.500 – 158.000		FBML 6
				158.000 – 160.000	153.000 – 155.000	FB 2, 5 MHz duplex
				160.000 – 160.500		FBML 7
				160.500 – 162.500	155.500 – 157.500	FB 3, 5 MHz duplex
				162.500 – 165.700		FBML 8
				165.700 – 166.300	170.700 – 171.300	ML 4, 5 MHz duplex
				166.300 – 166.800		FBML 9
				166.800 – 169.000	171.800 – 174.000	ML 5, 5 MHz duplex
				169.000 – 169.400		FBML 10
				169.400 – 169.800		Paging
				169.800 – 170.700		FBML 11
				170.700 – 171.300	165.700 – 166.300	FB 4, 5 MHz duplex
				171.300 – 171.800		FBML 12
				171.800 – 174.000	166.800 – 169.000	FB 5, 5 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
174 – 223	BROADCASTING 5.235 5.237 5.243	BROADCASTING	BROADCASTING	174.000 – 230.000		Television. Band III. Channel 5 - 11. ST61. T-DAB. Block 11A-D. WI95
223 – 230	BROADCASTING Fixed Mobile 5.243 5.246 5.247	BROADCASTING Fixed Mobile	BROADCASTING	174.000 – 230.000		Television. Band III. Channel 12. ST61. T-DAB. Block 12A-D. WI95
230 – 235	FIXED MOBILE 5.247 5.251 5.252	BROADCASTING S5.252 FIXED MOBILE	BROADCASTING 230 - 238	230.000 – 238.000		T-DAB. Block 13A-C. WI95
235 – 267	FIXED MOBILE 5.111 5.199 5.252 5.254 5.256	BROADCASTING S5.252 FIXED MOBILE 5.199 5.254 5.256	BROADCASTING 230 - 238. 246 - 254 FIXED MOBILE	230.000 – 238.000 246.000 – 254.000 246.000 – 254.000 254.000 – 328.600 242.950 – 243.050 254.000 – 328.600		 T-DAB. Block 13D - F. WI95 International distress
267 - 272	FIXED MOBILE Space Operation (space-to-Earth) 5.254 5.257	FIXED MOBILE Space Operation (space-to-Earth) 5.254 5.257	FIXED MOBILE	254.000 – 328.600 254.000 – 328.600		

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
272 – 273	SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	FIXED MOBILE	254.000 – 328.600 254.000 – 328.600		
273 – 312	FIXED MOBILE 5.254	FIXED MOBILE 5.254	FIXED MOBILE	254.000 – 328.600 254.000 – 328.600		

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
300 MHz – 3 000 MHz						
312 - 315	FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254 5.255	FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254 5.255	FIXED MOBILE Mobile-Satellite (Earth-to-space)	254.000 – 328.600 254.000 – 328.600		
315 – 322	FIXED MOBILE 5.254	FIXED MOBILE 5.254	FIXED MOBILE	254.000 – 328.600 254.000 – 328.600		
322.0 – 328.6	FIXED MOBILE RADIO ASTRONOMY 5.149	FIXED MOBILE RADIO ASTRONOMY 5.149	FIXED MOBILE RADIO ASTRONOMY	254.000 – 328.600 254.000 – 328.600		
328.6 - 335.4	AERONAUTICAL RADIONAVIGATION 5.258 5.259	AERONAUTICAL RADIONAVIGATION 5.258	AERONAUTICAL RADIONAVIGATION	328.600 - 335.400		ILS Glideslope

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
335.4 - 387.0	FIXED MOBILE 5.254	FIXED MOBILE 5.254	FIXED	335.400 – 350.000		
				350.000 – 353.000	355.000 – 358.000	FX 1 5.000 MHz duplex
				353.000 – 355.000		
				355.000 – 358.000	350.000 – 353.000	FX 2 5.000 MHz duplex
				358.000 – 370.000		
				370.000 - 373.000	375.000 – 378.000	FX 3 5.000 MHz duplex
				373.000 – 375.000		
				375.000 – 378.000	370.000 – 373.000	FX 4 5.000 MHz duplex
				378.000 – 380.000		
			MOBILE			
				336.000 - 339.000	357.000 - 360.000	Portable equipment for broadcasting
				357.000 - 360.000	336.000 - 339.000	Portable equipment for broadcasting
				380.000 – 385.000	390.000 – 395.000	TETRA, Emergency, 10 MHz duplex
				380.0000 – 380.1500	390.000 – 390.1500	DMO, 10 MHz duplex
				384.8000 – 385.0000	394.8000 – 395.0000	AGA, 10 MHz duplex
				385.000 – 389.900	395.000 – 399.900	TETRA, Government, 10 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
387 – 390	FIXED MOBILE Mobile-Satellite (space-to-Earth) 5.208A 5.254 5.255	FIXED MOBILE Mobile-Satellite (space-to-Earth) 5.208A 5.254 5.255	FIXED MOBILE Mobile-Satellite (space-to-Earth)	385.000 – 389.900	395.000 – 399.900	TETRA, Government, 10 MHz duplex
390.0 – 399.5	FIXED MOBILE 5.254	FIXED MOBILE 5.254	FIXED MOBILE	390.000 – 395.000 390.000 – 390.15000 394.8000 – 395.0000 395.000 – 399.900	380.000 – 385.000 380.000 – 380.15000 384.8000 – 385.0000 385.000 – 389.900	TETRA, Emergency, 10 MHz duplex DMO, 10 MHz duplex AGA, 10 MHz duplex TETRA, Government, 10 MHz duplex
399.90 - 400.05	MOBILE- SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220	MOBILE- SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220	LANDMOBILE – SATELLITE RADIONAVIGATION – SATELLITE			
400.0500 - 400.1500	STANDARD FREQUENCY AND TIME SIGNAL SATELLITE (400.1 MHz) 5.261 5.262	STANDARD FREQUENCY AND TIME SIGNAL SATELLITE (400.1 MHz) 5.261	STANDARD FREQUENCY AND TIME SIGNAL SATELLITE (400.1 MHz)			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
400.15 - 401.00	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space Operation (space-to-Earth) 5.262 5.264	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space Operation (space-to-Earth) 5.262 5.264	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space Operation (space-to-Earth)			Radiosondes (balloons)
401 – 402	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SAT (Earth-to-space) METEOROLOGICAL SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SAT (Earth-to-space) METEOROLOGICAL SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SAT (Earth-to-space) METEOROLOGICAL SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	401.100 – 406.000		Radiosondes (balloons) ML Portables, max 5 W

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
402 - 403	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS EARTH EXPLORATION – SATELLITE (Earth-to-space) METEOROLOGICAL – SATELITE (Earth-to-space) Fixed Land Mobile	401.100 – 406.000		Radiosondes (balloons) ML Portables, max 5 W
403 - 406	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS Fixed Land Mobile	401.100 – 406.000		Radiosondes (balloons) ML Portables, max 5 W
406.0 - 406.1	MOBILE-SATELLITE (Earth-to-space) 5.266 5.267	MOBILE-SATELLITE (Earth-to-space) 5.266 5.267	MOBILE-SATELLITE (Earth-to-space)			
406.1 - 410.0	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	FIXED LAND MOBILE RADIO ASTRONOMY	409.900 – 410.400 406.100 – 409.000		FX 1 FBML 1

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
410 – 420	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	FIXED LAND MOBILE	409.900 – 410.400 410.400 – 411.900 411.900 – 412.900 412.900 – 413.400 413.400 – 414.900 414.900 – 415.400 415.400 – 419.900 419.900 – 420.400	 420.400 – 421.900 421.900 – 412.900 422.900 – 423.400 423.400 – 424.900 419.900 – 420.400 425.400 – 429.900 414.900 – 415.400	FX 1 Public trunking 1, National, 10 MHz duplex Public trunking 3, Regional, 10 MHz duplex ML 1, 10 MHz duplex Public trunking 2, National, 10 MHz duplex FX 2. 5 MHz duplex ML 2, 10 MHz duplex FX 2. 5 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
420 - 430	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	FIXED MOBILE except aeronautical mobile Radiolocation	FIXED LAND MOBILE Radiolocation	419.900 – 420.400 420.400 – 421.900 421.900 – 412.900 422.900 – 423.400 423.400 – 424.900 424.900 – 425.400 425.400 – 429.900 429.900 – 430.000	414.900 – 415.400 410.400 – 411.900 411.900 – 412.900 412.900 – 413.400 413.400 – 414.900 415.400 – 419.900	FX 2. 5 MHz duplex Public trunking 1, National, 10 MHz duplex Public trunking 3, Regional, 10 MHz duplex FB 1, 10 MHz duplex Public trunking 2, National, 10 MHz duplex FX 3 FB 2, 10 MHz duplex FBML 2
430.00 – 440.00	AMATEUR RADIOLOCATION 5.138 5.271 5.272 5.273 5.274 5.275 5.276 5.277 5.280 5.281 5.282 5.283	AMATEUR RADIOLOCATION 5.138 5.282	AMATEUR RADIOLOCATION	430.000 – 440.000 435.000 – 438.000 433.050 - 434.790		Amateur Amateur – Satellite ISM Remote control. Telemetry and alarm transmissions. Short range digital radio transmissions. Centre frequency 433.92 MHz.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
440 - 450	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	FIXED MOBILE except aeronautical mobile Radiolocation 5.286	FIXED LAND MOBILE Radiolocation	440.000 – 441.000 444.000 – 445.000 449.000 - 450.000 441.000 – 444.000 445.000 - 446.000 446.000 - 449.000	 449.000 – 450.000 444.000 – 445.000 446.000 – 449.000 441.000 – 444.000	FX 4 FX 5, 5 MHz duplex FX 5, 5 MHz duplex ML 3, 5 MHz duplex FBML 3 FB 3, 5 MHz duplex
450 - 455	FIXED MOBILE 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	FIXED MOBILE 5.209 5.286 5.286A	FIXED LAND MOBILE	452.000 – 453.000 450.000 – 452.000 453.000 – 453.975 453.975 – 454.425 454.425 – 459.000	462.000 – 463.000 460.000 – 462.000 463.000 – 463.975 464.425 – 469.000	FX 6, 10 MHz duplex ML 4, 10 MHz duplex ML 5, 10 MHz duplex Paging ML 6, 10 MHz duplex
455 - 456	FIXED MOBILE 5.209 5.271 5.286A 5.286B 5.286C 5.286E	FIXED MOBILE 5.209 5.286A	FIXED LAND MOBILE	454.425 – 459.000	464.425 – 469.000	ML 6, 10 MHz duplex

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
456 – 459	FIXED MOBILE 5.271 5.287 5.288	FIXED MOBILE	FIXED LAND MOBILE	454.425 – 459.000	464.425 – 469.000	ML 6, 10 MHz duplex
459 – 460	FIXED MOBILE 5.209 5.271 5.286A 5.286B 5.286C 5.286E	FIXED MOBILE 5.209 5.286A	FIXED LAND MOBILE	459.000 – 460.000		FBML 4
460 – 470	FIXED MOBILE Meteorological-Satellite (space-to-Earth) 5.288 5.289 5.290	FIXED MOBILE Meteorological-Satellite (space-to-Earth) 5.289	FIXED LAND MOBILE Meteorological-Satellite (space-to-Earth)	462.000 – 463.000 469.000 – 470.000 460.000 – 462.000 463.000 – 463.975 463.975 – 464.425 464.425 – 469.000	452.000 – 453.000 450.000 – 452.000 456.000 - 460.000 454.425 – 469.000	FX 6, 10 MHz duplex FX 7 FB 4, 10 MHz duplex FB 5, 10 MHz duplex Low power devices, mobile radios FB 6, 10 MHz duplex
470 – 790	BROADCASTING 5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311 5.312	BROADCASTING 5.149 5.304 5.306 5.311	BROADCASTING	470.000 – 790.000		Television band IV/V Channel 21-60 Support functions for broadcasting

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
790 –862	FIXED BROADCASTING 5.312 5.314 5.315 5.316 5.319 5.321	FIXED BROADCASTING	FIXED BROADCASTING	825.000 - 835.000 790.000 – 806.000 800.000 - 814.000 854.000 - 862.000		 Television band V Channel 61-62 Wireless microphones. NIB Wireless microphones. NIB
862 – 890	FIXED MOBILE except Aeronautical Mobile 5.317A BROADCASTING 5.322 5.319 5.323	FIXED MOBILE except Aeronautical Mobile 5.317A BROADCASTING 5.322	FIXED LAND MOBILE BROADCASTING	862.000 - 866.000 864.100 - 868.100 868.100 - 870.000 870.400 - 875.800 876.200 – 879.800 880.200 – 889.800	 915.400 – 920.800 921.200 – 924.800 925.200 – 934.800	Low power devices Low power devices Low power devices Reserved ML GSM-R ML Extended GSM

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
890 – 942	FIXED	FIXED	FIXED			
	MOBILE except aeronautical mobile 5.317A	MOBILE except aeronautical mobile 5.317A	LAND MOBILE	890.200 - 898.000	935.200 - 943.000	GSM ML
	BROADCASTING	BROADCASTING		898.400 - 907.200	943.400 - 947.200	GSM ML
	5.322	5.322		907.600 - 913.800	952.600 - 958.800	GSM ML
	Radiolocation	Radiolocation		914.000 - 914.800	959.000 - 959.800	CT-1
	5.323			914.800 – 915.400		Paging and low power device
				915.400 – 920.800	870.400 - 875.800	Reserved FB
				921.200 – 924.800	876.200 – 879.800	GSM-R FB
				925.200 – 934.800	880.200 – 889.800	Extended GSM FB
			BROADCASTING (862-960 MHz)			
942 – 960	FIXED	FIXED	FIXED			
	MOBILE except aeronautical mobile 5.317A	MOBILE except aeronautical mobile 5.317A	LAND MOBILE	935.200 - 943.000	890.200 - 898.000	GSM FB
	BROADCASTING 5.322	BROADCASTING 5.322		943.400 - 947.200	898.400 - 907.200	GSM FB
	Radiolocation	Radiolocation		952.600 - 958.800	907.600 - 913.800	GSM FB
	5.323			959.000 - 959.800	914.000 - 914.800	CT-1
			BROADCASTING			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
960 - 1215	AERONAUTICAL RADIONAVIGATION 5.328 5.328A	AERONAUTICAL RADIONAVIGATION 5.328 5.328A	AERONAUTICAL RADIONAVIGATION	 1030.0 1090.0	 1090.0 1030.0	DME. Duplex 63 MHz SSR SSR
1215 - 1240	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE (space-to-Earth) (space-to-space) 5.329 SPACE RESEARCH (active) 5.330 5.331 5.332	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE (space-to-Earth) (space-to-space) 5.329 SPACE RESEARCH (active) 5.332	EARTH EXPLORATION – SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE (space-to-Earth) (space-to-space)			GPS L2 1227 MHz
1240 - 1260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE(space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.330 5.331 5.332 5.334 5.335	EARTH EXPLORATION - SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE(space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.332	EARTH EXPLORATION – SATELLITE (active) RADIOLOCATION RADIONAVIGATION - SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) Amateur			Radar

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1260 - 1300	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.335A 5.334 5.335	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) SPACE RESEARCH (active) Amateur 5.282 5.335A	EARTH EXPLORATION – SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) SPACE RESEARCH (active) Amateur			Radar
1300 - 1350	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	AERONAUTICAL RADIONAVIGATION RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space)	1330.0 – 1400.0		Air Route Surveillance Radars.
1350 - 1400	FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339	FIXED MOBILE RADIOLOCATION 5.339 5.149	FIXED LAND MOBILE RADIOLOCATION Radio Astronomy	1350.0 – 1375.0 1375.0 – 1400.0 1350.0 - 1355.0 1330.0 – 1400.0	1492.0 – 1517.0 1427.0 – 1452.0	Used for Point to Multi point systems Used for Point to Multi point systems

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1400 - 1427	EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION -SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			
1427 - 1429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	FIXED LAND MOBILE	1427.0 – 1452.0	1375.0 – 1400.0	Used for Point to Multi point systems
1429 - 1452	FIXED MOBILE except aeronautical mobile 5.341 5.342	FIXED MOBILE except aeronautical mobile 5.341	FIXED LAND MOBILE	1427.0 – 1452.0	1375.0 – 1400.0	Used for Point to Multi point systems
1452 - 1492	FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 5.347 BROADCASTING - SATELLITE 5.345 5.347 5.341 5.342	FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 BROADCASTING - SATELLITE 5.345 5.341	FIXED LAND MOBILE BROADCASTING BROADCASTING - SATELLITE	1452.0 - 1467.5 1467.5 – 1492.0		T-DAB S-DAB
1492 - 1525	FIXED MOBILE except aeronautical mobile 5.341 5.342	FIXED MOBILE except aeronautical mobile 5.341	FIXED LAND MOBILE	1492.0 – 1517.0	1350.0 – 1375.0	Used for Point to Multi point systems Channel plan

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1525 - 1530	SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth Exploration Satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth Exploration Satellite Mobile except aeronautical mobile 5.349 5.341 5.351 5.354	SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) Land Mobile			
1530 - 1535	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A 5.351A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to Earth) 5.353A 5.351A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.351 5.354	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Land Mobile			
1535 - 1559	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A	MOBILE-SATELLITE (space-to-Earth)			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1559 - 1610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.329A 5.341 5.363 5.355A 5.359A	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth))(space-to-space) 5.329A 5.341	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth))(space-to-space)	1575.42		GPS L1 1575.42 MHz
1610.0 - 1610.6	MOBILE SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	MOBILE SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.364 5.366 5.367 5.368 S5.371 5.372	MOBILE SATELLITE (Earth-to-space AERONAUTICAL RADIONAVIGATION			MSS 1610 - 1626.5
1610.6 - 1613.8	MOBILE SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	MOBILE SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372	MOBILE SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION			MSS 1610 - 1626.5

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1613.8 - 1626.5	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-Satellite (space-to-Earth) 5.341 5.355 5.359 6.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-Satellite (space-to-Earth) 5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372	MOBILE - SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Mobile-Satellite (space-to-Earth)			MSS 1610 - 1626.5
1626.5 – 1660.0	MOBILE-SATELLITE (Earth-to-space) 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	MOBILE-SATELLITE (Earth-to-space) 5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	MOBILE -SATELLITE (Earth-to-space)			
1660.0 - 1660.5	MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A S5.376A	MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	MOBILE - SATELLITE (Earth-to-space)			
1660.5 - 1668.4	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.341 5.376A	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.341 5.376A	RADIO ASTRONOMY Fixed Land Mobile			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1668.4 - 1670	METEOROLOGICAL AIDS FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY 5.149 5.341	METEOROLOGICAL AIDS FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY 5.149 5.341	METEOROLOGICAL AIDS FIXED LAND MOBILE RADIO ASTRONOMY			
1670 - 1675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) LAND MOBILE AERONAUTICAL MOBILE	1670.0 – 1675.0	1800.0 – 1805.0	Terrestrial Flight Telephone System (TFTS) uplink
1675 – 1690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) LAND MOBILE AERONAUTICAL MOBILE	1675.0 – 1700.0 1680.0		Video

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1690 – 1700	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except Aeronautical Mobile 5.289 5.341	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except Aeronautical Mobile 5.289 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) LAND MOBILE AERONAUTICAL MOBILE	1675.0 – 1700.0		
1700 - 1710	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.289 5.341	FIXED METEOROLOGICAL-SATELLITE (spaceto--Earth) MOBILE except Aeronautical Mobile 5.289 5.341	FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) LAND MOBILE	1706.5 - 1790.5	1825.5 - 1909.5	
1710 - 1930	FIXED MOBILE 5.380 5.384A 5.388A 5.149 5.341 5.385 5.386 5.387 5.388	FIXED MOBILE 5.380 5.384A 5.388A 5.149 5.341 5.385 5.388	FIXED MOBILE	1710.0 – 1785.0 1800.0 – 1805.0 1805.0 – 1880.0 1880.5 – 1900.0 1900.0 – 1980.0	1805.0 – 1880.0 1670.0 – 1675.0 1710.0 – 1785.0	GSM 1800 Terrestrial Flight Telephone System (TFTS) downlink GSM 1800 DECT IMT-2000

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
1930 - 1970	FIXED MOBILE S5.388A 5.388	FIXED MOBILE 5.388A 5.388	FIXED MOBILE	1900.0 – 1980.0		IMT-2000
1970 - 1980	FIXED MOBILE 5.388A 5.388	FIXED MOBILE 5.388A 5.388	FIXED MOBILE	1900.0 – 1980.0		IMT-2000
1980 - 2010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A	FIXED MOBILE MOBILE - SATELLITE (Earth-to-space)			MSS
2010 - 2025	FIXED MOBILE 5.388A 5.388	FIXED MOBILE 5.388A 5.388	FIXED MOBILE	2010.0 – 2025.0		IMT-2000

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2025 - 2110	SPACE OPERATION (Earth-to-space) (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	SPACE OPERATION (Earth-to-space) (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	FIXED MOBILE	2025.0 – 2110.0	2200.0 – 2290.0	Fixed Links
2110 - 2120	FIXED MOBILE 5.388A SPACE RESEARCH (deep space)(Earth-to-space) 5.388	FIXED MOBILE 5.388A SPACE RESEARCH (deep space)(Earth-to-space) 5.388	FIXED MOBILE	2110.0 – 2170.0		IMT-2000
2120 - 2160	FIXED MOBILE 5.388A 5.388	FIXED MOBILE 5.388A 5.388	FIXED MOBILE	2110.0 – 2170.0		IMT-2000,
2160 - 2170	FIXED MOBILE 5.388A 5.388 5.392A	FIXED MOBILE 5.388A 5.388	FIXED MOBILE	2110.0 – 2170.0		IMT-2000

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2170 - 2200	FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A 5.389A 5.389F 5.392A	FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A 5.389A	FIXED MOBILE MOBILE-SATELLITE (space-Earth)			
2200 - 2290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space)	2200.0 – 2290.0 2200.0 – 2290.0	2025.0 – 2110.0	Fixed Links
2290 - 2300	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (deep space)(space-to-Earth)	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (deep space)(space-to-Earth)	FIXED LAND MOBILE SPACE RESEARCH (deep space)(space-Earth)			

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2300 - 2450	FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.395	FIXED MOBILE Amateur Radiolocation 5.150 5.282	FIXED MOBILE Amateur Radiolocation	2400.0 – 2500		ISM
2450 - 2483.5	FIXED MOBILE Radiolocation 5.150 5.397	FIXED MOBILE Radiolocation 5.150	FIXED MOBILE Radiolocation	2400.0 – 2500.0		ISM
2483.5 - 2500	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.351A Radiolocation 5.150 5.371 5.397 5.398 5.399 5.400 5.402	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation 5.150 5.371 5.398 5.399 5.402	FIXED MOBILE MOBILE-SATELLITE (space-Earth) Radiolocation	2483.5 - 2484.5 2484.5 – 2568.5 2483.5 – 2484.5 2483.5 – 2500.0 2400.0 – 2500.0	2603.5 – 2687.5	 MSS ISM

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2500 - 2520	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.403 5.351A 5.405 5.407 5.412 5.414	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.403 5.351A 5.407 5.414	FIXED LAND MOBILE MOBILE - SATELLITE (space-Earth)	2484.5 - 2568.5	2603.5 - 2687.5	This is an IMT-2000 extension band
2520 - 2655	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.403 5.405 5.412 5.418 5.418B 5.418C	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.403 5.405 5.412 5.418B 5.418C	FIXED LAND MOBILE BROADCASTING - SATELLITE	2484.5 – 2568.5 2520.0 – 2593.0 2597.0 – 2670.0 2603.5 – 2687.5	2603.5 – 2687.5 2597 .0- 2670.0 2520.0 – 2593.0 2484.5 – 2568.5	This is an IMT-2000 extension band.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2655 - 2670	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.420	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.420	FIXED LAND MOBILE BROADCASTING - SATELLITE Earth Exploration Satellite (passive) Radio Astronomy	2597.0 – 2670.0 2603.5 – 2687.5	2520.0 – 2593.0 2484.5 – 2568.5	This is an IMT-2000 extension band
2670 - 2690	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.419 5.420	FIXED 5.409 5.410 5.411 MOBILE except Aeronautical Mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.419 5.420	FIXED LAND MOBILE MOBILE - SATELLITE (Earth-space) Earth Exploration - Satellite (passive) Radio Astronomy Space Research (passive)	2603.5 – 3687.5	2484.5 – 2568.5	This is an IMT-2000 extension band.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
2690 - 2700	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION -SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			
2700 - 2900	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	AERONAUTICAL RADIONAVIGATION			Airport Surveillance Radars.
2900 - 3100	RADIONAVIGATION 5.426 Radiolocation 5.425 5.427	RADIONAVIGATION 5.426 Radiolocation 5.425 5.427	RADIONAVIGATION			Radar

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
3000 MHz – 10000 MHz						
3100 – 3300	RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) 5.149 5.428	RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) 5.149	RADIOLOCATION			Radiolocation.
3300 –3400	RADIOLOCATION 5.149 5.429 5.430	RADIOLOCATION 5.149	RADIOLOCATION			Radiolocation.
3400 – 3600	FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation 5.431	FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation	FIXED			Used for Fixed Wireless Access, according to national channel plan based on CEPT/ERC/Recommendation 14-03 Annex B.
3600 – 4200	FIXED FIXED-SATELLITE (space-to-Earth) Mobile	FIXED FIXED-SATELLITE (space-to-Earth) Mobile	FIXED FIXED-SATELLITE (space-to-Earth)			Reserved for Fixed Links (point-to-point). VSAT/SNG on a coordinated basis.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
4200 – 4400	AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440	AERONAUTICAL RADIONAVIGATION 5.438 5.440	AERONAUTICAL RADIONAVIGATION			Radio altimeters
4400 – 4500	FIXED MOBILE	FIXED MOBILE				
4500 – 4800	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE	FIXED FIXED-SATELLITE (space-Earth) 5.441 MOBILE				
4800 – 4990	FIXED MOBILE 5.442 Radio Astronomy 5.149 5.339 5.443	FIXED MOBILE 5.442 Radio Astronomy 5.149 5.339				
4990 – 5000	FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive) 5.149	FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive) 5.149				

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
5000 – 5150	AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A 5.444B 5.444C	AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A 5.444B 5.444C	AERONAUTICAL RADIONAVIGATION			Microwave Landing systems. NGSO MSS feeder links (5091-5150 MHz)
5150 – 5250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A 5.446 5.447 5.447B 5.447C	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A 5.447B 5.447C				Hiperlan NGSO MSS feeder links
5250 – 5255	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D 5.448 5.448A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D 5.448A				Hiperlan
5255 – 5350	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.448 5.448A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.448A				Hiperlan

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
5350 – 5460	EARTH EXPLORATION-SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation	EARTH EXPLORATION-SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation				Airborne Weather Radar (Centre frequency 5400 MHz)
5460 – 5470	RADIONAVIGATION 5.449 Radiolocation	RADIONAVIGATION 5.449 Radiolocation				
5470 – 5650	MARITIME RADIONAVIGATION Radiolocation 5.450 5.451 5.452	MARITIME RADIONAVIGATION Radiolocation 5.452				Hiperlan
5650 – 5725	RADIOLOCATION Amateur Space Research (deep space) 5.282 5.451 5.453 5.454 5.455	RADIOLOCATION Amateur Space Research (deep space) 5.282				Hiperlan.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
5725 – 5830	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455 5.456	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150				Short Range Devices - ISM (5725-5875 MHz, centre frequency 5800 MHz). Possible us of Road Transport Informatics in the band 5795-5815 MHz.
5830 – 5850	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-Satellite (space-to-Earth) 5.150 5.451 5.453 5.455 5.456	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-Satellite (space-Earth) 5.150				Short Range Devices - ISM (5725-5875 MHz, centre frequency 5800 MHz)
5850 – 5925	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	FIXED FIXED-SATELLITE (Earth-to-space)			Short Range Devices - ISM (5725-5875 MHz, centre frequency 5800 MHz) VSAT/SNG

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
5925 – 6700	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.149 5.440 5.458	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.149 5.440 5.458	FIXED FIXED-SATELLITE (Earth-to-space)			The band 5.925-6.425 GHz is reserved for fixed links (point-to-point) used for high capacity telecommunications services. ITU-R Recommendation F.383 applies. The band 6.425-6.700 GHz is used for fixed links (pont-to-point) with high capacity telecommunications services. ITU-R Recommendation F.384 applies. This band is also used for VSAT/SNG on a coordinated basis.
6700 – 7075	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth)			This band is used for fixed links (pont-to-point) with high capacity telecommunications services. ITU-R Recommendation F.384 applies.
7075 – 7250	FIXED MOBILE 5.458 5.459 5.460	FIXED MOBILE 5.458 5.460	FIXED			This band is used for fixed links (pont-to-point) with medium to high capacity telecommunications services. ITU-R Recommendation F.385
7250 – 7300	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	FIXED			This band is used for fixed links (pont-to-point) with medium to high capacity telecommunications services ITU-R Recommendation F.385

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
7300 – 7450	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.461	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.461	FIXED			This band is used for fixed links (pont-to-point) with medium to high capacity telecommunications services, see chapter 7.2.12. ITU-R Recommendation F.385 Annex 3 applies.
7450 – 7550	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.461A	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile 5.461A	FIXED			This band is used for fixed links (pont-to-point) with medium to high capacity telecommunications services, see chapter 7.2.12. ITU-R Recommendation F.385 Annex 3 applies.
7550 – 7750	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except Aeronautical Mobile	FIXED			This band is used for fixed links (pont-to-point) with medium to high capacity telecommunications services, see chapter 7.2.12. ITU-R Recommendation F.385 The band 7.725-7.750 GHz is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
7750 – 7850	FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) 5.461B MOBILE except Aeronautical Mobile	FIXED METEOROLOGICAL - SATELLITE (space-to-Earth) 5.461B MOBILE except Aeronautical Mobile	FIXED			This band is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386
7850 – 7900	FIXED MOBILE except Aeronautical Mobile	FIXED MOBILE except Aeronautical Mobile	FIXED			This band is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386
7900 – 8025	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	FIXED			This band is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386
8025 – 8175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	FIXED			This band is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
8175 – 8215	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	FIXED			This band is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.
8215 – 8400	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	FIXED			The band 8.215-8.275 GHz is reserved for future fixed links (point-to-point) used for high capacity telecommunication services. ITU-R Recommendation F.386 The band 8.275-8.400 is reserved for future fixed links (point-to-point) used for medium capacity telecommunication services. ITU-R Recommendation F.386
8400 – 8500	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466 5.467	FIXED MOBILE except Aeronautical Mobile SPACE RESEARCH (space-to-Earth) 5.465	FIXED			This band is reserved for future fixed links (point-to-point) used for medium capacity telecommunication services. ITU-R Recommendation F.386
8500 – 8550	RADIOLOCATION 5.468 5.469	RADIOLOCATION				

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
8550 – 8650	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A				
8650 – 8750	RADIOLOCATION 5.468 5.469	RADIOLOCATION				
8750 – 8850	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470				Airborne Doppler Radar (center frequency 8800 MHz)
8850 – 9000	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	RADIOLOCATION MARITIME RADIONAVIGATION 5.472	RADIOLOCATION			
9000 – 9200	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.471	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation	AERONAUTICAL RADIONAVIGATION			Precision Approach Radars.
9200 – 9300	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474	RADIOLOCATION			Radars.

Frequency bands (MHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (MHz)	Duplex bands (MHz)	Remarks
9300 – 9500	RADIONAVIGATION 5.476 Radiolocation 5.427 5.474 5.475	RADIONAVIGATION 5.476 Radiolocation 5.427 5.474 5.475	RADIONAVIGATION			Radars.
9500 – 9800	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	RADIONAVIGATION			Radars.
9800 – 10000	RADIOLOCATION Fixed 5.477 5.478 5.479	RADIOLOCATION Fixed 5.479	RADIOLOCATION			

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
10 GHz – 30 GHz						
10 - 10.45	FIXED MOBILE RADIOLOCATION Amateur 5.479	FIXED MOBILE RADIOLOCATION Amateur 5.479	FIXED			The band 10.15-10.45 GHz is reserved for future Fixed Wireless Access applications
10.45 - 10.50	RADIOLOCATION Amateur Amateur-Satellite 5.481	RADIOLOCATION Amateur Amateur-Satellite	RADIOLOCATION			The band 10.45-10.50 GHz is reserved for future Fixed Wireless Access applications
10.50 - 10.55	FIXED MOBILE Radiolocation	FIXED MOBILE Radiolocation	FIXED			The band 10.50-10.55 GHz is reserved for future Fixed Wireless Access applications
10.55 - 10.60	FIXED MOBILE except Aeronautical Mobile Radiolocation	FIXED MOBILE except Aeronautical Mobile Radiolocation	FIXED			The band 10.55-10.60 GHz is reserved for future Fixed Wireless Access applications

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
10.60 - 10.68	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482	FIXED			The band 10.60-10.65 GHz is reserved for future Fixed Wireless Access applications.
10.68 - 10.70	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483				
10.70 - 11.70	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except Aeronautical Mobile	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484	FIXED FIXED-SATELLITE (space-to-earth)			This band is reserved for future Fixed Links (point-to-point) with high capacity. ITU Recommendation F-387 applies. The bands 10.95-11.2 GHz and 11.45-11.7 GHz is also used by DTH applications on a secondary basis.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
11.70 - 12.50	FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except Aeronautical Mobile 5.487 5.487A 5.492	FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except Aeronautical Mobile 5.487 5.487A 5.492				
12.50 - 12.75	FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.494 5.495 5.496	FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)			VSAT/SNG.
12.75 - 13.25	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space Research (deep space)(space-to-Earth)	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space Research (deep space)(space-to-Earth)	FIXED			Reserved for Fixed Links (point-to-point). ITU Recommendation 497 applies
13.25 - 13.40	Earth Exploration-Satellite (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	Earth Exploration-Satellite (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499				Airborne Doppler Radar.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
13.40 - 13.75	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard Frequency and Time Signal-Satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard Frequency and Time Signal-Satellite (Earth-space) 5.501B	RADIOLOCATION			Low Power
13.75 - 14	FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 5.499 5.500 5.501 5.502 5.503 5.503A	FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 5.502 5.503 5.503A	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION			VSAT/SNG and Low Power

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
14 - 14.25	FIXED-SATELLITE (Earth-to-space) 5.484 A 5.506 RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research 5.505	FIXED-SATELLITE (Earth-to-space) 5.484 A 5.506 RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research 5.505	FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION			This band is mainly reserved for VSAT/SNG use.
14.25 - 14.30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research 5.505 5.508 5.509	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research 5.505 5.508 5.509	FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION			This band is mainly reserved for VSAT/SNG use.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
14.30 - 14.40	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radio navigation-Satellite	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radio navigation-Satellite	FIXED-SATELLITE (Earth-to-space)			This band is mainly reserved for VSAT/SNG use
14.40 - 14.47	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research (space-to-Earth)	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research (space-to-Earth)	FIXED-SATELLITE (Earth-space)			This band is mainly reserved for VSAT/SNG use .

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
14.47 - 14.50	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radio Astronomy 5.149	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except Aeronautical Mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radio Astronomy 5.149	FIXED-SATELLITE (Earth-to-space)			This band is mainly reserved for VSAT/SNG use.
14.50 - 14.80	FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space Research	FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space Research	FIXED			Used for Fixed Links. ITU Recommendation F-636
14.80 - 15.35	FIXED MOBILE Space Research 5.339	FIXED MOBILE Space Research 5.339	FIXED			Used for Fixed Links. ITU Recommendation F-636

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
15.35 - 15.40	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 S5.511	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
15.40 - 15.43	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION			Radio altimeters/Radars
15.43 – 15.63	FIXED-SATELLITE (space-to-Earth)(Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	FIXED-SATELLITE (space-to-Earth)(Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	AERONAUTICAL RADIONAVIGATION			Radio altimeters/Radars
15.63 – 15.7	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION			Radio altimeters/Radars
15.70 - 16.60	RADIOLOCATION 5.512 5.513	RADIOLOCATION	RADIOLOCATION			Radio Altimeters/Distance Measuring Equipment.
16.60 - 17.10	RADIOLOCATION Space Research (deep space)(Earth-to-space) 5.512 5.513	RADIOLOCATION Space Research (deep space)(Earth-to-space)				
17.10 - 17.20	RADIOLOCATION 5.512 5.513	RADIOLOCATION				This band will be used for HIPERLAN in the future.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
17.20 - 17.30	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.513A				This band will be used for HIPERLAN in the future.
17.30 - 17.70	FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	FIXED-SATELLITE (Earth-to-space)			Future use of BSS feeder links. There is a possible future use of this band for FSS/SNG applications. There is an agenda item of WRC-03 to possibly introduce a primary FS allocation in this band.
17.70 - 18.10	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	FIXED FIXED-SATELLITE			Reserved for Fixed links. ITU Recommendation F-595 applies. Future use of BSS feeder links.
18.10 - 18.40	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.520 MOBILE 5.519 5.521	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.520 MOBILE 5.519 5.521	FIXED FIXED-SATELLITE			Reserved for Fixed Links up to 18.3 GHz. ITU Recommendation F.595 applies. The band 18.3-18.4 is reserved for the Fixed Satellite Service (GSO).

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
18.40 - 18.60	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth)			Reserved for the Fixed Satellite Service (GSO).
18.60 - 18.80	FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except Aeronautical Mobile EARTH EXPLORATION-SATELLITE (passive) Space Research (passive) 5.522A 5.522C	FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except Aeronautical Mobile EARTH EXPLORATION-SATELLITE (passive) Space Research (passive) 5.522A	FIXED FIXED-SATELLITE (space-to-Earth)			Shared between the Fixed Service and the Fixed Satellite Service (GSO). ITU-R Recommendation F.595
18.80 - 19.30	FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth)			Shared between the Fixed Service and the Fixed Satellite Service (NGSO). ITU-R Recommendation F.595
19.30 – 19.70	FIXED FIXED-SATELLITE (space-to-Earth)(Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	FIXED FIXED-SATELLITE (space-to-Earth))(Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	FIXED FIXED-SATELLITE (space-to-Earth))(Earth-to-space)			Future NGSO MSS feeder links. Possible future use of this band for HDFSS applications (downlink).

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
19.70 - 20.10	FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-Satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-Satellite (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)			Reserved for Fixed Satellite Service (GSO). Possibly used for HDFSS. Allocated to the fixed and Mobile Services on a primary basis in many African and Arab countries.
20.10 - 20.20	FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth) 5.525 5.526 5.527 5.528	FIXED-SATELLITE (space-to-Earth)			Reserved for Fixed Satellite Service (GSO). Possibly used for HDFSS. Allocated to the fixed and Mobile Services on a primary basis in many African and Arab countries.
20.20 - 21.20	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth)				
21.20 - 21.40	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
21.40 - 22	FIXED MOBILE BROADCASTING-SATELLITE 5.530	FIXED MOBILE BROADCASTING-SATELLITE 5.530	FIXED BROADCASTING-SATELLITE			Some Fixed Links in this band. The band is allocated to the Broadcast Satellitte Service (High Definition Television – HDTV) from 1 April 2007 on a primary basis.
22 - 22.21	FIXED MOBILE except Aeronautical Mobile 5.149	FIXED MOBILE except Aeronautical Mobile 5.149	FIXED			The band 22-22.6 GHz and 23-23.6 GHz is used for fixed links. CEPT/ERC/RECOMMENDATION T/R 13-02 applies.
22.21 - 22.50	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	FIXED			The band 22-22.6 GHz and 23-23.6 GHz is used for fixed links. CEPT/ERC/RECOMMENDATION T/R 13-02 applies.
22.50 - 22.55	FIXED MOBILE	FIXED MOBILE	FIXED			The band 22-22.6 GHz and 23-23.6 GHz is used for fixed links. CEPT/ERC/RECOMMENDATION T/R 13-02 applies.
22.55 – 23.55	FIXED INTER-SATELLITE MOBILE 5.149	FIXED INTER-SATELLITE MOBILE 5.149	FIXED			The band 22-22.6 GHz and 23-23.6 GHz is used for fixed links. CEPT/ERC/RECOMMENDATION T/R 13-02 applies.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
23.55 - 23.60	FIXED MOBILE	FIXED MOBILE	FIXED			The band 22-22.6 GHz and 23-23.6 GHz is used for fixed links. CEPT/ERC/RECOMMENDATION T/R 13-02 applies.
23.60 - 24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
24 - 24.05	AMATEUR AMATEUR-SATELLITE 5.150	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			The band 24-24.25 GHz (center frequency 24.125 GHz) is reserved for future ISM applications.
24.05 - 24.25	RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150	RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150				The band 24-24.25 GHz (center frequency 24.125 GHz) is reserved for future ISM applications
24.25 - 24.45	FIXED	FIXED	FIXED			
24.45 - 24.65	FIXED INTER-SATELLITE	FIXED INTER-SATELLITE	FIXED			The band 24.5-26.5 GHz is reserved for Fixed Links (point-to-point) and for Fixed Wireless Access (point-to-multipoint). CEPT Recommendation T/R 13-02 Annex B applies.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
24.65 - 24.75	FIXED INTER-SATELLITE	FIXED INTER-SATELLITE	FIXED			The band 24.5-26.5 GHz is reserved for Fixed Links (point-to-point) and for Fixed Wireless Access (point-to-multipoint). CEPT Recommendation T/R 13-02 Annex B applies.
24.75 - 25.25	FIXED	FIXED	FIXED			The band 24.5-26.5 GHz is reserved for Fixed Links (point-to-point) and for Fixed Wireless Access (point-to-multipoint). CEPT Recommendation T/R 13-02 Annex B applies.
25.25 – 25.50	FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite(Earth-to-space)	FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite(Earth-to-space)	FIXED			The band 24.5-26.5 GHz is reserved for Fixed Links (point-to-point) and for Fixed Wireless Access (point-to-multipoint). CEPT Recommendation T/R 13-02 Annex B applies.
25.50 - 27	EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536A FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	FIXED			The band 24.5-26.5 GHz is reserved for Fixed Links (point-to-point) and for Fixed Wireless Access (point-to-multipoint). CEPT Recommendation T/R 13-02 Annex B applies.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
27 - 27.50	FIXED INTER-SATELLITE 5.536 MOBILE	FIXED INTER-SATELLITE 5.536 MOBILE				
27.50 - 28.50	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE 5.538 5.540	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE 5.538 5.540	FIXED FIXED-SATELLITE (Earth-to-space)			The band 27.5 - 29.5 GHz is reserved for the Fxed service and for uncoordinated Earth stations of the Fixed-satellite Service (Earth-to-space)
28.50 - 29.10	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space)			The band 27.5 - 29.5 GHz is reserved for the Fixed Service and for uncoordinated Earth stations of the Fixed-satellite Service (Earth-to-space)

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
29.1 – 29.50	FIXED FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space)			The band 27.5 - 29.5 GHz is reserved for the Fixed Service and for uncoordinated Earth stations of the Fixed-satellite Service (Earth-to-space)
29.50 - 29.90	FIXED-SATELLITE (Earth-to-space) 5.484 A 5.539 Earth Exploration-Satellite (Earth-to-space) 5.541 Mobile-Satellite (Earth-to-space) 5.540 5.542	FIXED-SATELLITE (Earth-to-space) 5.484 A 5.539 Earth Exploration-Satellite (Earth-to-space) 5.541 Mobile-Satellite (Earth-to-space) 5.540				Future feeder links for FSS/BSS (29.25-30 GHz). Allocated to the fixed and Mobile Services on a secondary basis in many African and Arab countries.
29.90 – 30.00	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE-SATELLITE (Earth-to-Space) Earth Exploration-Satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE-SATELLITE (Earth-to-Space) Earth Exploration-Satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540				Future feeder links for FSS/BSS (29.25-30 GHz). Allocated to the fixed and Mobile Services on a secondary basis in many African and Arab countries.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
30 GHz – 105 GHz						
30 - 31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.542	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth)				
31 - 31.30	FIXED 5.543A MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.545 5.149	FIXED MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.149				
31.30 - 31.50	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
31.50 - 31.80	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.546	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149				
31.80 - 32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547B 5.548	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.548	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION (01)02 applies.
32 - 32.30	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547C 5.548	FIXED S5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.548	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION (01)02 applies.
32.30 - 33	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION (01)02 applies.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
33 - 33.40	FIXED 5.547A RADIONAVIGATION 5.547 5.547E	FIXED 5.547A RADIONAVIGATION 5.547	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION (01)02 applies.
33.40 - 34.20	RADIOLOCATION 5.549	RADIOLOCATION				
34.20 - 34.70	RADIO LOCATION SPACE RESEARCH (deep space)(Earth-to-space) 5.549	RADIOLOCATION SPACE RESEARCH (deep space)(Earth-to-space)				
34.70 - 35.20	RADIOLOCATION Space Research 5.550 5.549	RADIOLOCATION Space Research				
35.20 – 35.5	METEOROLOGICAL AIDS RADIOLOCATION 5.549	METEOROLOGICAL AIDS RADIOLOCATION				
35.5 –36	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.551A	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.551A				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
36 - 37	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149				
37 - 37.50	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547	FIXED			HDFS (37-40 GHz)
37.50 - 38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.551AA 5.547	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.551AA 5.547	FIXED			This band is reserved for the future use of Fixed Links (point-to-point). ITU-R Recommendation F.749 Annex 1 applies (similar to CEPT Rec 12-01).

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
38 - 39.50	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.551AA 5.547	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.551AA 5.547	FIXED			This band is reserved for the future use of Fixed Links (point-to-point). ITU-R Recommendation F.749 Annex 1 applies (similar to CEPT Rec 12-01).
39.50 - 40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.551AA 5.547	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.551AA 5.547				High definition applications in the Fixed Satellite Service. HDFS (37-40 GHz).

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
40 - 40.50	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)				
40.5 - 41	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE			This band is reserved for future broadband Fixed Wireless Acess systems such as MVDS and MWS and for High Definition applications in the Fixed Satellite Service.
41 - 42	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.551G 5.547	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.551G 5.547	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE			This band is reserved for future broadband Fixed Wireless Acess systems such as MVDS and MWS and for High Definition applications in the Fixed Satellite Service.

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
42 - 42.50	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.551G 5.547 5.551AA	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.551G 5.547 5.551AA	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE			This band is reserved for future broadband Fixed Wireless Acess systems such as MVDS and MWS and for High Definition applications in the Fixed Satellite Service. There are no international channel plans for the band. A harmonised frequency channel plan for the Fixed Service is under development in the CEPT.
42.50 - 43.50	IXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except Aeronautical Mobile RADIO ASTRONOMY 5.149 5.547	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except Aeronautical Mobile RADIO ASTRONOMY 5.149 5.547	FIXED FIXED-SATELLITE (Earth-to-space)			This band is reserved for future broadband Fixed Wireless Acess systems such as MVDS and MWS. There are no international channel plans for the band. A harmonised frequency channel plan for the Fixed Service is under development in the CEPT.
43.50 – 47.00	MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554				The band 43.5-45.5 GHz is reserved.
47 - 47.20	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE			

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
47.20 – 50.20	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.552A 5.555	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.552A 5.555	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE			The bands 47.2-47.5 GHz and 47.9-48.2 GHz are reserved for possible future use by stations in the High Altitude Platform Service. BSS feeder links.
50.20 - 50.40	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.555A	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.555A				
50.40 - 51.40	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-Satellite (Earth-to-space)	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-Satellite (Earth-to-space)				There are filings for FSS systems in this band. There is an expected harmonized government use of this band in all 3 ITU regions.
51.40 - 52.6	FIXED MOBILE 5.547 5.556	FIXED MOBILE 5.547 5.556	FIXED			Reserved for the Fixed Service. CEPT Recommendation 12-11 applies.
52.6 – 54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
54.25 - 55.78	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)				
55.78 - 56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	FIXED			This band is reserved for the Fixed Service. Future requirement for HDFS in the band 55.78-57 GHz (WRC-2000). CEPT/ERC/RECOMMENDATION 12-12 applies.
56.9 - 57.0	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	FIXED			Future requirement for HDFS in the band 55.78-57 GHz (WRC-2000)

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
57 – 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION 12-09 applies.
58.20 - 59	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	FIXED			This band is reserved for the Fixed Service. CEPT/ERC/RECOMMENDATION 12-09 applies
59 – 59.3	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
59.3 - 64	FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	MOBILE FIXED			The band 61-61.5 GHz (centre frequency 61.25 GHz) is reserved for future ISM use. Parts of this band might be used for transport applications. The band 59-61 GHz is reserved.
64 - 65	FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	FIXED			Future requirement for HDFS in the band 64-66 GHz (WRC-2000)
65 - 66	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	FIXED			Future requirement for HDFS in the band 64-66 GHz (WRC-2000)
66 - 71	INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
71 - 74	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)				
74 - 75.50	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561				
75.50 - 76	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561 5.559A	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561 5.559A				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
76 – 77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth) 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth) 5.149				
77.5 - 78	AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149	AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149				
78 - 79	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
79 - 81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149				
81 - 84	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space Research (space-to-Earth) 5.149 5.560A	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space Research (space-to-Earth) 5.149 5.560A				This could be a candidate band for future HDFSS systems. Any deployment of HDFSS must ensure the protection of the Radio Astronomy Service.
84 - 86	FIXED FIXED-SATELLITE (Earth-to-space) 5.561A MOBILE RADIO ASTRONOMY 5.149	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149				This could be a candidate band for future HDFSS systems. Any deployment of HDFSS must ensure the protection of the Radio Astronomy Service

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
86 - 92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
92 - 94	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149				
94.0 – 94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.FFF	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.FFF				
94.1 – 95.0	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.FFF	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.FFF				

Frequency bands (GHz)	ITU Region 1 Radio Regulations	National Allocations	Main Utilisations in Botswana	Frequ. bands Mid Frequ. (GHz)	Duplex bands (GHz)	Remarks
95 - 100	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554				
100 - 102	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
102 - 105	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY 5.149				

5.0 ITU Radio Regulations Footnotes

5.53 Administrations using the frequencies below 9 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated.

5.54 Administrations conducting scientific research using frequencies below 9 kHz are urged to advice other administrations that may be concerned in order that such research may be afforded all practical protection from harmful interference.

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

5.56 The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-97)

5.57 The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorised 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, Bulgaria, Georgia, Kazakstan, Kyrgyzstan, Russian Federation, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radio navigation service on a primary basis. (WRC-2000)

5.60 In the bands 70-90 kHz (70-86 kHz in Region 1) and 110-130 kHz (112-130 kHz in Region 1), pulsed radio navigation 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 radio navigation service in the band 90-110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.

5.63 (UP - WRC-97)

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

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

5.67 Additional allocation*:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 130-148.5 kHz is also allocated to the radio navigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-97)

5.68 Alternative allocation: in Angola, Botswana, Burundi, the Congo, Malawi, Dem. Rep. of the Congo, Rwanda and South Africa, the band 160-200 kHz is allocated to the fixed service on a primary basis.

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

5.70 Alternative allocation: in Angola, Botswana, Burundi, Cameroon, the Central African Republic, the Congo, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Tanzania, Tanzania, Chad, Zaire, Zambia and Zimbabwe, the band 200 – 283.5 kHz is allocated to the aeronautical radio navigation service on a primary basis.

5.71 Alternative allocation: in Tunisia, the band 255-283.5 kHz is allocated to the broadcasting service on a primary basis.

5.72 Norwegian stations of the fixed service situated in northern areas (north of 60° N) subject to auroral disturbances are allowed to continue operation on four frequencies in the bands 283.5-490 kHz and 510-526.5 kHz.

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

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

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

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.

5.79 The use of the bands 415-495 kHz and 505-526.5 kHz (505-510 kHz in Region 2) by the maritime mobile service is limited to radiotelegraphy.

5.79A When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organisation (IMO) (see Resolution 339 (Rev.WRC-97)). (WRC-97)

5.81 The bands 490-495 kHz and 505-510 kHz shall be subject to the provisions of Appendix 13, § 15 1), Part A2. (WRC-97)

5.82 In the maritime mobile service, the frequency 490 kHz is, from the date of full implementation of the GMDSS (see Resolution 331 (Rev.WRC-97)), to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the band 415-495 kHz for the aeronautical radio navigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-97)

5.83 The frequency 500 kHz is an international distress and calling frequency for Morse radiotelegraphy. The conditions for its use are prescribed in Articles 31 and 52, and in Appendix 13.

5.84 The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles 31 and 52 and in Appendix 13. (WRC-97)

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

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

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

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

5.93 Additional allocation: in Angola, Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also

allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. 9.21.

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

5.98 Alternative allocation: in Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.99 Additional allocation: in Saudi Arabia, Bosnia and Herzegovina, Iraq, Libya, Uzbekistan, Slovakia, the Czech Republic, Romania, Slovenia, Chad, Togo and Yugoslavia, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

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

5.101 Alternative allocation: in Burundi and Lesotho, the band 1 810-1 850 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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

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

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

5.108 The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

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

5.110 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.

5.111 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 N38/S31 and in Article 38/Appendix S13. The same applies to the frequencies 100003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

5.112 Alternative allocation: in Bosnia and Herzegovina, Cyprus, Denmark, France, Greece, Iceland, Italy, Malta, Norway, Sri Lanka, Turkey and Yugoslavia, the band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

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

5.114 Alternative allocation: in Bosnia and Herzegovina, Cyprus, Denmark, France, Greece, Iraq, Italy, Malta, Norway, Turkey and Yugoslavia, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.115 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article S31 and Appendix 13 by stations of the maritime mobile service engaged in coordinated search and rescue operations.

5.116 Administrations are urged to authorize the use of the band 3 155-3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3400 kHz to suit local needs.
It should be noted that frequencies in the range 3000 to 4000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

5.117 Alternative allocation: in Bosnia and Herzegovina, Cyprus, Côte d'Ivoire, Denmark, Egypt,France, Greece, Iceland, Italy, Liberia, Malta, Norway, Sri Lanka, Togo, Turkey and Yugoslavia, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.118 Additional allocation: in the United States, Japan, Mexico, Peru and Uruguay, the band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis.

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

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. 52.220 and Appendix 17).

5.128 In Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, Central African Republic, China, Georgia, India, Kazakstan, Mali, Niger, Kyrgyzstan, Russian Federation, 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 of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service. (WRC-97)

5.129 On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service communicating only within the boundary of the country in which they are located with a mean power not exceeding 50 W.

5.130 The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

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

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

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

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 limited to single-sideband emissions with the characteristics specified in Appendix 11 or to any other spectrum-efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference. (WRC-97).

5.135 (UP - WRC-97)

5.136 The band 5 900-5 950 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis, as well as to the following services: in Region 1 to the land mobile service on a primary basis, in Region 2 to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution 21 (Rev.WRC-95). After 1

April 2007 frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused by the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

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

5.138 The following bands:

6765-6795 kHz	(center frequency 6 780 kHz),
433.05-434.79 MHz	(center frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. S5.280,
61-61.5 GHz	(center frequency 61.25 GHz),
122-123 GHz	(center frequency 122.5 GHz), and
244-246 GHz	(center frequency 245 GHz)

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

5.139 Different category of service: in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. 5.33).

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

5.141 Alternative allocation: in Egypt, Eritrea, Ethiopia, Guinea, Libya and Madagascar, the band 7 000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-97)

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

5.145 The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

5.146 The bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz are allocated to the fixed service on a primary basis until 1 April 2007, subject to application of the procedure referred to in Resolution 21 (Rev.WRC-95). After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused by the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

5.147 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 stations using a total radiated power not exceeding 24 dBW.

5.148 (UP - WRC-97)

5. 149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,	4 990-5 000 MHz,	94,1-100 GHz,,
25 550-25 670 kHz,	6650-6 675.2 MHz,	102-109.5 GHz,
37.5-38.25 MHz,	10.6-10.68 GHz,	111.8-114.25 GHz,
73-74.6 MHz in Regions 1 and 3,	14.47-14.5 GHz,	128.33-128.59 GHz,
150.05-153 MHz in Region 1,	22.01-22.21 GHz,	129.23-129.49 GHz,
322-328.6 MHz,	22.21- 22.5 GHz,	130-134 GHz,
406.1-410 MHz,	22.81-22.86 GHz,	136-148.5 GHz,
608-614 MHz in Regions 1 and 3,	23.07-23.12 GHz	151.5-158.5 GHz,
1 330-1 400 MHz,	31.2-31.3 GHz,	168.59-168.93 GHz,
1 610.6-1 613.8 MHz,	31.5-31.8 GHz in Regions 1 and 3,	171.11-171.45 GHz,
1 660-1 670 MHz,	36.43-36.5 GHz,	172.31-172.65 GHz,
1 718.8-1 722.2 MHz,	42.5-43.5 GHz,	173.52-173.85 GHz,
2 655-2 690 MHz,	42.77-42.87 GHz,	195.75-196.15 GHz,
3 260-3 267 MHz,	43.07-43.17 GHz,	209-226 GHz,
3 332-3 339 MHz,	43.37-43.47 GHz,	241-250 GHz,
3 345.8-3 352.5 MHz,	48.94-49.04 GHz,	252-275 GHz
4 825-4 835 MHz,	76 - 86 GHz,	
4 950-4 990 MHz,	92 - 94 GHz,	

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space borne 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).

5. 150 The following bands:

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

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

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

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

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

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

5.160 Additional allocation: in Botswana, Burundi, Lesotho, Malawi, Namibia, Dem. Rep. Of the Congo, Rwanda and Swaziland, the band 41 - 44 MHz is also allocated to the aeronautical radio navigation service on a primary basis.

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

5.162A Additional allocation: in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Moldova, Monaco, Norway, the Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, Russian Federation, Sweden, Switzerland and Turkey, 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-97).

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

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

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

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

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

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

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

5.177 Additional allocation: in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. S9.21. (WRC-97).

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

5.180 The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guard band 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 74.7 MHz and 75.2 MHz.

5.181 Additional allocation: in Germany, Austria, Cyprus, Denmark, Egypt, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Malta, Morocco, Monaco, Norway, Syria, Sweden and Switzerland, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. S9.21. In order to ensure that harmful interference is not caused to stations of the aero-nautical radio navigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radio navigation service by any administration which may be identified in the application of the procedure
invoked under No. 9.21. (WRC-97).

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

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

5.197 Additional allocation: in Germany, Austria, Cyprus, Denmark, Egypt, France, Italy, Japan, Jordan, Lebanon, Malta, Morocco, Monaco, Norway, Pakistan, Syria, and Sweden, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No.S9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radio navigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radio navigation service by any administration which may be identified in the application of the procedures invoked under No. 9.21. (WRC-97).

5. 198 Additional allocation: the band 117.975-136 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis, subject to agreement obtained under No. 9.21. (WRC-97)

5.199 The bands 121.45-121.55 MHz and 242.95-243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radio beacons transmitting at 121.5 MHz and 243 MHz (see Appendix 13)

5.200 In the band 117.975-136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article N38/S31 and Article 38/Appendix 13 for distress and safety purposes with stations of the aeronautical mobile service.

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

5.202 Additional allocation: in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, United Arab Emirates, Georgia, the Islamic Republic of Iran, Jordan, Kazakstan, Latvia, Moldova, Oman, Uzbekistan, Poland, Syria, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine, the band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-97)

5.203 In the band 136-137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. 4.4 with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological-satellite service. (WRC-97)

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

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

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

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

5.206 Different category of service: in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, Hungary, Kazakstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. S5.33).

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

5.208A In making assignments to space stations in the mobile-satellite service in the bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in Table 1 of Recommendation ITU-R RA.769-1. (WRC-97)

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

5.210 Additional allocation: in Austria, France, Italy, Liechtenstein, Slovakia, the Czech Republic, the United Kingdom and Switzerland, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-97)

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

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

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

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

5.219 The use of the band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the band 148-149.9 MHz.

5.220 The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The mobile-satellite service shall not constrain the development and use of the radio navigation-satellite service in the bands 149.9 – 150.5 MHz and 399.9 – 400.05 MHz.

5.221 Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo, the Republic of Korea, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, the Islamic Republic of Iran, Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, Russian Federation, Senegal, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Yugoslavia, Zambia, and Zimbabwe. (WRC-97)

5.222 Emissions of the radio navigation-satellite service in the bands 149.9-150.05 MHz and 399.9-400.05 MHz may also be used by receiving earth stations of the space research service.

.223 Recognising that the use of the band 149.9-150.05 MHz by the fixed and mobile services may cause harmful interference to the radio navigation-satellite service, administrations are urged not to authorize such use in application of No. 4.4.

5.224A The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service (Earth-to-space) is limited to the land mobile-satellite service (Earth-to-space) until 1 January 2015. (WRC-97)

5.224B The allocation of the bands 149.9-150.05 MHz and 399.9-400.05 MHz to the radio navigation-satellite service shall be effective until 1 January 2015. (WRC-97)

5.226 The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article 31 and Appendix 13.

In the bands 156-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 13).

Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

However, the frequency 156.8 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radio communications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements.

5.227 In the maritime mobile VHF service the frequency 156.525 MHz is to be used exclusively for digital selective calling for distress, safety and calling. The conditions for the use of this frequency are prescribed in Articles 31 and 52, and Appendices 13 and 18.

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

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

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

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

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

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

5.252 Alternative allocation: in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under Article 14/No. 9.21

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. S9.21, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations.

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

5.256 The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes (see Appendix 13).

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

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

5.259 Additional allocation: in Germany, Austria, Cyprus, the Republic of Korea, Denmark, Egypt, Spain, France, Greece, Israel, Italy, Japan, Jordan, Malta, Morocco, Monaco, Norway, the Netherlands, Syria and Sweden, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radio navigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radio navigation service by any administration which may be identified in the application of the procedure invoked under No. 9.21. (WRC-97)

5.260 Recognizing that the use of the band 399.9-400.05 MHz by the fixed and mobile services may cause harmful interference to the radio navigation satellite service, administrations are urged not to authorize such use in application of No. 4.4.

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

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

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 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. in Annex 1 of Appendix S5 shall apply until such time as a competent world radiocommunication conference revises it.

5.266 The use of the band 406 – 406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radio beacons (see also Article N38/31 and article 38/Appendix 13).

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

5.268 Use of the band 410-420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed –153 dB(W/m 2) for $0° \le \delta \le 5°$, $-153 + 0.077 (\delta - 5)$ dB(W/m 2) for $5° \le \delta \le 70°$ and –148 dB(W/m 2) for $70° \le \delta \le 90$ o , where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. S4.10 does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. (WRC-97)

5.271 Additional allocation: in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan, Turkmenistan and Ukraine, the band 420-460 MHz is also allocated to the aeronautical radio navigation service (radio altimeters) on a secondary basis. (WRC-97)

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

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

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

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

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

5.277 Additional allocation: in Angola, Armenia, Azerbaijan, Belarus, Cameroon, the Congo, Djibouti, Gabon, Georgia, Hungary, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, Pakistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-97)

5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Portugal, Slovenia, Switzerland and Yugoslavia, the band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band

must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 15.13.

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

5.282 In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650-5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. 5.43). Administrations authorising 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)

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

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

5.286D Additional allocation: in Canada, the United States, Mexico and Panama, the band 454-455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (WRC-97)

5.286E Additional allocation: in Cape Verde, Indonesia, Nepal, Nigeria and Papua New Guinea, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. (WRC-97)

5.287 In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174 (see Resolution 341 (WRC-97)). (WRC-97)

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

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

5.290 Different category of service: in Afghanistan, Armenia, Azerbaijan, Belarus, China, Japan, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Turkmenistan and Ukraine, 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.

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. S9.21 and subject to not causing harmful interference to existing and planned broadcasting stations.

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

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

5.296 Additional allocation: in Germany, Austria, Belgium, Cyprus, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libya, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470-790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table of Frequency Allocations in countries other than those listed in this footnote. (WRC-97)

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

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

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

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

5.311 Within the frequency band 620-790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see resolution 33 and 507). Such stations shall not produce a power flux density in excess of the value –129 dB(W/m^2) for angels of arrival less than 20° (see Recommendation 705) within the territories of other countries without the consent of the administrations of those countries.

5.312 Additional allocation: in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 645-862 MHz is also allocated to the aeronautical radio navigation service on a primary basis. (WRC-97)

5.314 Additional allocation: in Austria, Italy, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis. (WRC-97)

5.315 Alternative allocation: in Greece, Italy, Morocco and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis.

5.316 Additional allocation: in Germany, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Israel, Kenya, the Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Syria, Sweden, Switzerland and Yugoslavia, the band 790-830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830-862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. (WRC-97)
S5.317A Administration wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806 – 960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for the mobile systems (see Resolution 224 (WRC-2000)). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

5.319 Additional allocation: in Belarus, Russian Federation and Ukraine, the bands 806-840 MHz (Earth-to-space) and 856-890 MHz (space-to-Earth) are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of these bands by this service shall not cause harmful interference to, or claim protection from, services in other countries

operating in accordance with the Table of Frequency Allocations and is subject to special agreements between the administrations concerned.

5.321 Alternative allocation: in Italy, the band 838-854 MHz is allocated to the broadcasting service on a primary basis as from 1 January 1995.

5.322 In Region 1, in the band 862-960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. S5.10 to S5.13) excluding Algeria, Egypt, Spain, Libya, Morocco, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia subject to agreement obtained under Article 14/No. S9.21.

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

5.328 The band 960-1 215 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 facilities.

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

5.329 Use of the radio navigation-satellite service in the band 1 215-1 260 MHz shall be subject to the condition that no harmful interference is caused to, and no protection claimed from, the radio navigation service authorized under No. 5.331. Se also Resolution 606 (WRC-2000).

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

5.330 Additional allocation: in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Morocco, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.331 Additional allocation: in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, the Islamic Republic of Iran, Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, Pakistan, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden,

Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radio navigation service on a primary basis.

5.332 In the band 1 215-1 300 MHz, active space borne 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 radio navigation-satellite service and other services allocated on a primary basis.

5.334 Additional allocation: in Canada and the United States, the bands 1 240-1 300 MHz and 1 350-1 370 MHz are also allocated to the aeronautical radio navigation service on a primary basis.

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

5.335A In the band 1 260-1 300 MHz, active space borne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radio navigation service and other services allocated by footnotes on a primary basis.

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 radio navigation 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 1 260-1 300 MHz, by earth stations in the radio navigation-satellite service shall not cause interference to, nor constrain the development and operation of, the aeronautical-radio navigation service.

5.338 In Azerbaijan, Bulgaria, Mongolia, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, existing installations of the radio navigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-97)

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 Nos. 5.421 and 5.422,
10.68-10.7 GHz	except those provided for by No. 5.483,
15.35-15.4 GHz	except those provided for by No. 5.511,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz	in Region 2,
48.94-49.04 GHz	from airborne stations,
50.2-50.4 GHz,	except those provided for by No. 5.555A,
52.6-54.25 GHz,	

86-92 GHz,
100-102 GHz
109.5-111.8 GHz,
114.25-116 GHz,
148.5-151.5 GHz,
164-167 GHz,
182-185 GHz except those provided for by No. 5.563,
190-191.8 GHz
200-209 GHz,
226-231.5 GHz,
250-252 GHz.

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

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

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

5.347 Different category of service: in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Jordan, Kenya, Mozambique, Portugal, Sri Lanka, Swaziland, Yemen, Yugoslavia and Zimbabwe, the allocation of the band 1 452-1 492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007. (WRC-97)

5.349 Different category of service: in Saudi Arabia, Azerbaijan, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, France, the Islamic Republic of Iran, Iraq, Israel, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Mongolia, Oman, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33). (WRC-97)

5.351 The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.

5.351A For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-1 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions 212 (Rev. WRC-97) and 225(WRC-2000)shall apply.

5.353A In applying the procedures of No. 9.11A to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-2000) shall apply.

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

5.355 Additional allocation: in Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the bands 1 540-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-97)

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

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

5.357A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222(WRC-2000) shall apply).

5.359 Additional allocation: in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Democratic People's Republic of Korea, Romania, Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan, Ukraine, Zambia and Zimbabwe the bands 1 550-1 645.5 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 the bands 1 550-1 555 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz.

5.362 (SUP - WRC-97)

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

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

5.364 The use of the band 1 610-1 626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radio determination-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 –15dB(W/4 kHz) in the part of the band used by the systems operating in accordance with the provisions of No. 5.366 (to which No. 953/S.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 –3dB(W/4 kHz). Stations of the mobile-satellite service shall not claim protection from stations in the aeronautical radio navigation 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 coordination of mobile-satellite networks shall make all practical efforts to ensure protection of stations operating in accordance with the provisions of No. 5.366.

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 Article 14/No.S9.21.

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

5.368 With respect to the radio determination-satellite and mobile-satellite services the provisions of No. S4.10 do not apply in the band 1 610-1 626.5 MHz, with the exception of the aeronautical radio navigation-satellite service.

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

5.371 Additional allocation: in Region 1, the bands 1 610-1 626.5 MHz (Earth-to-space) and 2 483.5-2 500 MHz (space-to-Earth) are also allocated to the radio determination-satellite service on a secondary basis, subject to agreement obtained under No. S9.21.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6-1 613.8 MHz by stations of the radio determination-satellite and mobile-satellite services (No. S29.13 applies).

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

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

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)

5.380 The bands 1 670-1 675 MHz and 1 800-1 805 MHz are intended for use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The use of the band 1 670-1 675 MHz by stations in the systems for public correspondence with aircrafts is limited to transmission from aeronautical stations and the use of the band 1800 – 1805 MHz is limited to transmissions from aircraft stations.

5.384A The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution 223 (WRC-2000). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

5.385 Additional allocation: the bands 1 718.8-1 722.2 is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

5.387 Additional allocation: in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-97)

5.389F In Algeria, Benin, Cape Verde, Egypt, Mali, Syria 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.

5.388 The bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which these

bands are allocated. The bands should be made available for IMT-2000 in accordance with Resolution 212 (Rev. WRC-97). (See also Resolution 223 (WRC-2000).)

5.388A In regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-1 170 MHz and in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution 221 (WRC-2000). The use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

5.389A The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. S9.11A and to the provisions of Resolution 716 (WRC-95). The use of these bands shall not commence before 1 January 2000; however the use of the band 1980 – 1990 MHz in Region 2 shall not commence before 1 January 2005.

5.391 In making assignments to the mobile service in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-97)

5.392 Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geo stationary 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, 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 geo stationary and non-geo stationary satellites.

5.392A Additional allocation: in Russian Federation, the band 2 160-2 200 MHz is also allocated to the space research service (space-to-Earth) on a primary basis until 1 January 2005. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services operating in this frequency band.

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

5.397 Different category of service: in France, the band 2 450-2 500 MHz is allocated on a primary basis to the radiolocation service (see No. 5.33). Such use is subject to agreement with administrations having services operating or planned to operate in accordance

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

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

5.400 Different category of service: in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Sudan, Swaziland, Togo and Zambia, the allocation of the band 2 483.5-2 500 MHz to the radio determination-satellite service (space-to-Earth) is on a primary basis (see No. 5.33), subject to agreement obtained under No.9.21 from countries not listed in this provision. (WRC-97

5.402 The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radio determination-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 2483.5 – 2500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4990 – 5000 MHz band allocated to the radio astronomy service worldwide.

5.403 Subject to agreement obtained under No. 9.21, the band 2 520-2 535 MHz (until 1 January 2005 the band 2 500-2 535 MHz) may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provision of Resolution 46 (Rev.WRC-95)/No. 9.11 apply.

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

5.407 In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed -152 dB(W/m2/4 kHz) in Argentina, unless otherwise agreed by the administration concerned.

5.409 Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2 500-2 690 MHz.

5.410 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. S9.21.

5.411 When planning new tropospheric scatter radio-relay links in the band 2 500-2 690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geo stationary-satellite orbit.

5.412 Alternative allocation: in Azerbaijan, Bulgaria, Kyrgyzstan, Turkmenistan and Ukraine, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.413 In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690-2 700 MHz.

5.414 The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) shall be effective on 1 January 2005 and is subject to coordination under No. S9.11A.

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. S9.21. The power flux-density at the Earth's surface shall not exceed the values given in article S21, Table S21-4.

5.418B Use of the band 2 630-2 655 MHz by non-geo stationary-satellite systems for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. 9.12. Resolution 539 (WRC-2000) applies.

5.418C Use of the band 2 630-2 655 MHz by geo stationary-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-geo stationary-satellite service (sound), and No. 22.2 does not apply. Resolution 539 (WRC-2000) applies.

S5.419 The allocation of the frequency band 2 670-2 690 MHz to the mobile-satellite service shall be effective from 1 January 2005. When introducing systems of the mobile-satellite service in this band, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. 9.11A.

5.420 The band 2 655-2 670 MHz (until 1 January 2005 the band 2 655-2 690 MHz) may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under Article 14/No. 9.21. The coordination under Resolution 46 (Rev.WRC-95)/No. 9.11A.

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 radio navigation service.

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 2 900-3100 MHz by the aeronautical radio navigation 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 (ra cons) and shall not cause interference to ship or aeronautical radars in the radio navigation service, having regard, however, to No. S4.9.

5.428 Additional allocation: in Azerbaijan, Bulgaria, Cuba, Kazakstan, Mongolia, Poland, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 3 100-3 300 MHz is also allocated to the radio navigation service on a primary basis. (WRC-97)

5.429 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, the Congo, the Republic of Korea, the United Arab Emirates, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Democratic People's Republic of Korea and Yemen, the band 3 300-3 400 MHz is

also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-97)

5.430 Additional allocation: in Azerbaijan, Bulgaria, Cuba, Mongolia, Poland, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 3 300-3 400 MHz is also allocated to the radio navigation service on a primary basis. (WRC-97)

5.431 Additional allocation: in Germany, Israel, Nigeria and the United Kingdom, the band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis.

5.437 Additional allocation: in Germany and Norway, the band 4 200-4 210 MHz is also allocated to the fixed service on a secondary basis. (WRC-97)

5.438 Use of the band 4 200-4 400 MHz by the aeronautical radio navigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

5.439 Additional allocation: in China, the Islamic Republic of Iran and Libya, the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis. (WRC-97)

5.440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ±2 MHz of these frequencies, subject to agreement obtained under No. 9.21.

5.441 The use of the bands 4500-4800 MHz (space-to-Earth), 6725-7025 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 geo stationary-satellite system in the fixed-satellite service shall be in accordance with the provisions of Appendix S30B. 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-geo stationary-satellite system in the fixed-satellite service is subject to application of the provisions of No.9.12 for coordination with other non-geo stationary-satellite systems in the fixed-satellite service. Non-geo stationary-satellite networks in the fixed-satellite service shall not claim protection from geo stationary-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-geo stationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geo stationary-satellite networks, and No.5.43A does not apply. Non-geo stationary-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.

5.442 In the bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service.

4.443 Different category of service: in Argentina, Australia and Canada, the allocation of the bands 4 825-4 835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. 5.33).

5.443A Additional allocation: The band 5000-5010 MHz is also allocated to the radio navigation-satellite-service (Earth-to-space) on a primary basis. See Resolution 603 (WRC-2000).

5.443B Additional allocation: The band 5010-5030 MHz is also allocated to the radio navigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5030-5150 MHz by all the space stations within any radio navigation-satellite service system (space-to-Earth) operating in the band 5010-5030 MHz shall not exceed -124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4990-5 000 MHz, the aggregate power flux-density produced in the 4990-5 000 MHz band by all the space stations within any radio navigation- satellite service (space-to-Earth) system operating in the 5010-5030 MHz band shall not exceed the provisional value of -171 dB(W/m^2) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution 604 (WRC-2000) applies.

5.444 The band 5030-5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band No.5.444A and Resolution 114 (WRC-95) apply.

5.444A Additional allocation: the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geo stationary mobile-satellite systems and is subject to co-ordination under No. 9.11A.

In the band 5 09-5 150 MHz, the following conditions also apply:

- prior to 1 January 2010, the use of the band 5 091-5 150 MHz by feeder links of non-geo stationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution 114 (WRC-95);

- prior to 1 January 2010, the requirements of existing and planned international standard systems for the aeronautical radio navigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;

- after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geo stationary mobile-satellite systems;

- after 1 January 2010, the fixed-satellite service will become secondary to the aeronautical radio navigation service.

5.446 Additional allocation: in the countries listed in Nos. 5.369 and 5.400, the band 5 150-5 216 MHz is also allocated to the radio determination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. 9.21. In Region 2, the band is also

allocated to the radio determination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. 5.369 and 5.400, the band is also allocated to the radio determination-satellite service (space-to-Earth on a secondary basis. The use by the radio determination-satellite service is limited to feeder links in conjunction with the radio determination-satellite service operating in the bands 1610 – 1626.5 MHz and/or 2483.5 – 2500 MHz. The total power flux density at the Earth's surface shall in no case exceed $-159 dBW/m^2$ in any 4 kHz bands for the angels of arrival.

5.447A The allocation to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geo stationary-satellite systems in the mobile-satellite service and is subject to co-ordination 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-geo stationary-satellite systems in the mobile-satellite service and is subject to provisions of No. 9.11A. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150-5 216 MHz shall in no case exceed -164 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.447C Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 MHz operated under Nos. 5.447A and 5.447B shall co-ordinate on an equal basis in accordance with Resolution No. 9.11A with administrations responsible for non-geo stationary-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 space borne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)

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

5.448.B The earth exploration-satellite (active) service operating in the 5 350-5 460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radio navigation service.

5.449 The use of the band 5 350-5 470 MHz by the aeronautical radio navigation service is limited to airborne radars and associated airborne beacons.

5.450 Additional allocation: in Austria, Azerbaijan, Bulgaria, the Islamic Republic of Iran, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radio navigation service on a primary basis. (WRC-97)

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 radio navigation service.

5.453 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Singapore, Swaziland, Tanzania, Chad, and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.454 Different category of service: in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. 5.33). (WRC-97)

5.455 Additional allocation: in Armenia, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Kazakstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis.

5.456 Additional allocation: in Germany and in Cameroon, the band 5 755-5 850 MHz is also allocated to the fixed service on a primary basis.

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-geo stationary satellite systems of the mobile-satellite service and is subject to co-ordination under No. S9.11A. The use of the band 6 700 - 7 075 MHz (space-to-Earth) by feeder links for non-geo stationary satellite systems in the mobile-satellite service is not subject to No. 22.2.

5.458C Administrations making submissions in the band 7 025-7 075 MHz (Earth-to-space) for geo stationary-satellite systems in the fixed-satellite service after 17 November 1995 shall consult on the basis of relevant ITU-R Recommendations with the administrations that have notified and brought into use non-geo stationary-satellite systems in this frequency band before 18 November 1995 upon request of the latter administrations. This consultation shall be with a

view to facilitating shared operation of both geo stationary-satellite systems in the fixed-satellite service and non-geo stationary-satellite systems in this band.

5.459 Additional allocation: in Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21. (WRC-97)

5.460 Additional allocation: the band 7 145-7 235 MHz is also allocated to the space research (Earth-to-space) service on a primary basis, subject to agreement obtained under No. 9.21. The use of the band 7 145-7 190 MHz is restricted to deep space; no emissions to deep space shall be effected in the band 7 190-7 235 MHz.

5.461 Additional allocation: the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21.

5.461A The use of the frequency band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geo stationary satellite systems. Non-geo stationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on primary basis until the end of their lifetime. (WRC-97)

5.461B The use of the band 7 750-7 850 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geo stationary satellite systems. (WRC-97)

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

-174dB(W/m²) in a 4 kHz band	for $0° \le \theta < 5°$
-174+0.5 (θ - 5) dB (W/m²) in a 4 kHz band	for $5° \le \theta < 25°$
-164 dB(W/m²) in a 4 kHz band	for $25° \le \theta \le 90°$

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

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

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

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

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

5.468 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana,

Indonesia, the Islamic Republic of Iran, Iraq, Jamaica, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syria, Democratic People's Republic of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

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

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 radio navigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.

5.471 Additional allocation in Algeria, Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, the Islamic Republic of Iran, Libya, the Netherlands, Qatar and Sudan, the bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radio navigation service, on a primary basis, for use by shore-based radars only.

5.472 In the bands 8 850-9 000 MHz and 9 200-9 225 MHz, the maritime radio navigation service is limited to shore-based radars.

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

5.474 In the band 9 200-9 500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article **31**).

5.475 The use of the band 9 300-9 500 MHz by the aeronautical radio navigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radio navigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radio navigation service. In the band 9 300-9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

5.476 In the band 9 300-9 320 MHz in the radio navigation service, the use of ship borne radars, other than those existing on 1 January 1976, is not permitted until 1 January 2001.

5.476A In the band 9 500-9 800 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radio navigation and radiolocation.

5.477 Different category of service: in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei, Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, the Islamic Republic of Iran, Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Sweden, Trinidad and Tobago, and Yemen, the allocation of the band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. 5.33). (WRC-97)

5.478 Additional allocation: in Azerbaijan, Bulgaria, Kazakstan, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radio navigation service on a primary basis. (WRC-97)

5.479 The band 9 975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

5.481 Additional allocation: in Germany, Angola, China, Ecuador, Spain, Japan, Morocco, Nigeria, Oman, Democratic People's Republic of Korea, Sweden, Tanzania and Thailand, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

5.482 In the band 10.6-10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed -3 dBW. These limits may be exceeded subject to agreement obtained under No. **9.21**. However, in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, China, the United Arab Emirates, Georgia, India, Indonesia, the Islamic Republic of Iran, Iraq, Japan, Kazakhstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable.

5.483 Additional allocation: in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Georgia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Democratic People's Republic of Korea, Romania, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Yemen and Yugoslavia, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-97)

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

5.484A The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7- 12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geo stationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. S9.12 for coordination with other non-geo stationary-satellite systems in the fixed-satellite service. Non-geo stationary-satellite systems in the fixed-satellite service shall not claim protection from geo stationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regu1ations, irrespective of the dates of

receipt by the Bureau of the comp1ete coordination or notification information, as appropriate, for the non-geo stationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geo stationary-satellite networks, and No. 5.43A does not app1y. Non-geo stationary-satellite systems in the fixed- satellite service in the above bands shall be operated in such a way that any unacceptab1e interference that may occur during their operation shall be rapidly eliminated.

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

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-Earth) on a primary basis, limited to non-geo stationary systems and subject to application of the provisions of No. S9.12 for coordination with other non-geo stationary satellite-systems in the fixed-satellite service. Non-geo stationary-satellite systems in the fixed-satellite service shall not claim protection from geo stationary-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-geo stationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geo stationary-satellite networks, and No.S5.43A does not apply. Non-geo stationary-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.

5. 492 Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan in 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 List, as appropriate.

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

5.495 Additional allocation: in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, Norway, Uganda, Portugal, Romania, Slovenia, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-97)

5.496 Additional allocation: in Austria, Azerbaijan, Kyrgyzstan, Turkmenistan and Ukraine, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the

fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Article S21, Table S21-4, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (WRC-97)

5.497 The use of the band 13.25-13.4 GHz by the aeronautical radio navigation service is limited to Doppler navigation aids.

5.498A The earth exploration-satellite (active) and space research (active) services operating in the 13.25-13.4 GHz band shall not cause harmful interference to, nor constrain the use and development of, the aeronautical radio navigation service. (WRC-97)

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

5.500 Additional allocation: in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sudan, Chad and Tunisia, the band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.501 Additional allocation: in Austria, Azerbaijan, Bulgaria, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom, Turkmenistan and Ukraine, the band 13.4-14 GHz is also allocated to the radio navigation service on a primary basis. (WRC-97)

5.501A The allocation of the band 13.4-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)

5.501B In the band 13.4-13.75 GHz, the Earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service. (WRC-97)

5.502 In the band 13.75-14GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radio navigation services shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radio navigation stations operating in accordance with the Radio Regulations. No.S5.43A does not apply. See Resolution 733 (WRC-2000).

5.503 In the band 13.75-14GHz, geo stationary 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 geo stationary space stations in the space research service will operate on a secondary basis. Until those geo stationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

- the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in GSO shall not exceed 71 dBW in the 6 MHz band from 13.772 to 13.778GHz;

- the e.i.r.p. density of emissions from any earth station in the FSS operating with a space station in non-GSO shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778GHz.

Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the FSS space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

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

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

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

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 co-ordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.

5.508 Additional allocation: in Germany, Austria, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland, Turkey and Yugoslavia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-97)

5.509 Additional allocation: in Japan and Pakistan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis.

5.510 The use of the band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe.

5.511 Additional allocation: in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, the Islamic Republic of Iran, Iraq, Israel, Kuwait,

Lebanon, Libya, Pakistan, Qatar, Syria, Slovenia, Somalia and Yugoslavia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

5.511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geo stationary systems in the mobile-satellite service, subject to coordination under No. S9.11A. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geo stationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux- density radiated in the 15.35-15.4 GHz band by all the space stations within any feeder-link of a non-geo stationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43-15.63 GHz band shall not exceed the level of -156 dB(W /m^2) in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time.

5.5.11C Stations operating in the aeronautical radio navigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340. The minimum co-ordination distance required to protect the aeronautical radio navigation stations (No. 4.10 applies) from harmful interference from feeder link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder link earth station shall be in accordance with Recommendation ITU-R S.1340. (WRC-97)

5.5.11D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4-15.43 GHz and 15.63-15.7 GHz in the space-to-Earth direction and 15.63-15.65 GHz in the Earth-to-space direction. In the bands 15.4-15.43 GHz and 15.65-15.7 GHz, emissions from a non-geo stationary space station shall not exceed the power flux-density limits at the Earth's surface of –146 dB(W/m^2 /MHz) for any angle of arrival. In the band 15.63-15.65 GHz, where an administration plans emissions from a non-geo stationary space station that exceed –146 dB(W/m^2 /MHz) for any angle of arrival, it shall coordinate under No. 9.11A with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63-15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radio navigation service (No. 4.10 applies). (WRC-97)

5.512 Additional allocation: in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, the Islamic Republic of Iran, Jordan, Kuwait, Libya, Malaysia, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Yemen and Yugoslavia,
the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.513 Additional allocation: in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause

harmful interference to services operating in accordance with the Table in countries other than those included in No. 5.512.

5.513A Space borne active sensors operating in the band 17.2-17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis. (WRC-97)

5.514 Additional allocation: in Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan, Sweden and Yugoslavia, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 21.3 and 21.5 shall apply. (WRC-97)

5.516 The use of the band 17.3-18.1 GHz by geo stationary-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 17.3-17.8GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geo stationary 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- geo stationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No.9.12 for coordination with other non- geo stationary-satellite systems in the fixed-satellite service. Non-geo stationary-satellite systems in the fixed-satellite service shall not claim protection from geo stationary-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 geo stationary-satellite networks, and No.5.43A does not apply. Non-geo stationary-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.

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

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

5.521 Alternative allocation: in Germany, Denmark, the United Arab Emirates, Greece, Slovakia and the Czech Republic, the band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. S5.33). The provisions of No. 5.519 also apply. (WRC-97)

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. S21.5A and S21.16.2 respectively.

5.522B The use of the band 18.6-18.8 GHz by the fixed-satellite service is limited to the geo stationary systems and systems with an orbit of apogee greater than 20 000 km.

5.523A The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1GHz (Earth-to-space) by geo stationary and non-geo stationary 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 geo stationary-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-geo stationary-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-geo stationary-satellite networks shall not cause unacceptable interference to geo stationary 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-geo stationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. S9.11A, and No. S22.2 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-geo stationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** co-ordination 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 geo stationary fixed-satellite service systems and by feeder links for non-geo stationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. S9.11A, but not subject to the provisions of No. 22.2. The use of this band for other non-geo stationary fixed-satellite service systems, or for the cases indicated in Nos. 5.523C and 5.523E, is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)

5.523E No. 22.2 of the Radio Regulations shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geo stationary 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 21 November 1997. (WRC-97)

5.524 Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Dem. Rep. of the Congo, Syria, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, the band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band. (WRC-97)

5.525 In order to facilitate interregional coordination between networks in the mobile satellite and fixed satellite services, carriers in the mobile-satellite service that are most susceptible to

interference shall, to the extend practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz. (WRC-97)

5.526 In the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2, and in the bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point-to-point and point-to-multipoint communications.

5.527 In the bands 19.7-20.2 GHz and 29.5-30 GHz, the provisions of No. 4.10 do not apply with respect to the mobile-satellite service.

5.528 The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1GHz 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.

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

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.

5.535A The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geo stationary-satellite systems and feeder links to non-geo stationary 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 No. 5.523C and 5.523E where such use is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)

5.536 Use of the 25.25-27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.

5.536A Administrations installing earth exploration-satellite earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

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 geo stationary-satellite orbit. In the band 27.500-27.501 GHz, such

space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article S21, Table S21-4 on the Earth's surface.

5.539 The band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

5.540 Additional allocation: the band 27.501-29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.

5.541 In the band 28.5-30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.

5.541A Feeder links of non-geo stationary networks in the mobile-satellite service and geo stationary 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.

5.542 Additional allocation: in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, the Islamic Republic of Iran, Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC-97)

5.543 The band 29.95-30 GHz may be used for space-to-space links in the earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.

5.544 In the band 31-31.3 GHz the power flux-density limits specified in Article **21**, Table 21-4 shall apply to the space research service.

5.545 Different category of service: in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. S5.33). (WRC-97)

5.546 Different category of service: in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, the Islamic Republic of Iran, Israel, Jordan, Kazakstan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33). (WRC-97)

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions 75 (WRC-2000) and 79 (WRC-2000). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42GHz, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution 84 (WRC-2000)).

5.547A Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radio navigation service in the 31.8-33.4GHz band, taking into account the operational needs of the airborne radar systems.

5.547B Alternative allocation: in the United States, the band 31.8-32 GHz is allocated to the radio navigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

5.547C Alternative allocation: in the United States, the band 32-32.3 GHz is allocated to the inter-satellite, radio navigation 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 radio navigation services on a primary basis. (WRC-97)

5.547E Alternative allocation: in the United States, the band 33-33.4 GHz is allocated to the radio navigation service on a primary basis. (WRC-97)

5.548 In designing systems for the inter-satellite and radio navigation services in the band 32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radio navigation service (see Recommendation 707).

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

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

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

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

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

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

5.553 In the bands 43.5-47 GHz and 66-71GHz, 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).

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 radio navigation-satellite service.

5.555 Additional allocation: the band 48.94-49.04 is also allocated to the radio astronomy service on a primary basis.

5.555A The band 50.2-50.4 GHz is also allocated, on a primary basis to the fixed and mobile services until 1 July 2000. (WRC-97)

5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz and 64-65 GHz, radio astronomy observations may be carried out under national arrangements.

5.556A Use of the bands 54.25-56·9 GHz, 57.0-58.2 GHz and 59.0-59.3 GHz by the inter-satellite service is limited to satellites in the geo stationary satellite orbit. The single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m²/100 MHz) for all angles of arrival. (WRC-97)

5.556B 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)

5.558A Use of the band 56.9-57 GHz by inter-satellite systems is limited to links between satellites in geo stationary-satellite orbit and to transmissions from non-geo stationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geo stationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed –147 dB(W/m 2 /100 MHz) for all angles of arrival. (WRC-97)

5.557A In the band 55.78-56.26 GHZ, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service stations is limited to –26 dB(W/MHz).

5.558 In the bands 55.78-58.2 GHz, 59-64GHz, 66-71, GHz, 122.25-123 GHz, 130-134 GHz and 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)

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

5.559A The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

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.

5.560A The 81-81.5 GHz band is also located to the amateur and amateur-satellite services on a secondary basis.

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 stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

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 space borne 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.

5.562B In the bands 105-109.5 GHz, 111.8-114.25 GHz. 155.5-158.5 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only.

5.562C Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geo stationary-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 geo stationary orbital positions occupied by passive sensors, shall not exceed -148 dB(W /(m^2 . MHz)) for all angles of arrival.

5.562E The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz.

5.562F In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) services shall terminate on 1 January 2018.

5-562G The date of entry into force of the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be January 1 2018.

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.

5.563B The band 237.9-238 GHz is also located to the Earth exploration-satellite service (active) and the space research service (active) for space borne cloud radars only.

5.565 The frequency band 275-1000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623- 711 GHz, 795-909 GHz and 926-945 GHz;
Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363..365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band.