



Kingdom Of Bahrain National Frequency Plan

Version 1/2009

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Introduction

The radio frequency spectrum is a finite national resource and it is therefore vitally important that the spectrum resource is utilised in an efficient and effective manner. The National Frequency Plan (NFP) is a key instrument in spectrum resource management providing information on which radiocommunications services are permitted in each frequency band in the Kingdom of Bahrain.

In addition to honouring international agreements, the NFP should reflect national policy on the use of the radio spectrum (in support of the broader objectives for the telecommunications and broadcasting sectors, as well as Government users) and is the result of a planned, cooperative process. In accordance with a mandate outlined in Ministerial Order No. 5 of 2008 with respect to Establishment and Formation of the Spectrum Strategy and Coordination Committee, the said Committee (SSCC) has developed the NFP presented in this document.

The extent to which the full benefits of the radio spectrum are realised depends on the actual use that is made of it and how efficiently it is managed. The NFP has been developed taking full account of the National Spectrum Planning and Allocation policy established as a result of Ministerial Order No 4. of 2008. The primary objectives for the use of the radio spectrum include the following:

- Satisfy the requirements of international obligations and treaties;
- Support economic growth and create employment;
- Satisfy the spectrum requirements of sector members including those responsible for national security and defence;
- Meet the needs of civil aviation and the maritime industries;
- Support the introduction of more spectrally efficient technologies, including the timely introduction of digitised broadcasting networks;
- Provide for competitive telecommunication infrastructures through free and fair processes;
- Introduce future generations of public and private mobile technologies;
- Satisfy the spectrum requirements for internationally provided radio navigation services e.g. Galileo and GPS;
- Facilitate the rollout of broadband telecommunications networks;
- Facilitate regionally and globally harmonised frequencies for the PPDR (Public Protection and Disaster Relief) system, in order to help rescue and emergency teams communicate with each other,
- Stimulate technological innovation and competitiveness in a technology neutral fashion;
- Introduce new spectrum management techniques, where appropriate e.g. spectrum commons and spectrum property rights and trading etc;
- Provide spectrum for rural telecommunications with a particular emphasis on the provision of spectrum for telecommunications services for educational (including art and culture) and other public interest (including health and emergency) purposes.

The above objectives should be reflected in the allocations recorded in the NFP.

2. Electromagnetic Compatibility (EMC)

The unintentional generation of radio frequencies by equipment and networks is not covered in the NFP but will be addressed in future Electro Magnetic Compatibility (EMC) regulations. In general apparatus, equipment and networks which unintentionally generate radio frequency

emissions, for example but not limited to, information technology apparatus and equipment, large machines such as lifts (elevators) as well as wired electrical and electronic networks, as well as apparatus which uses radio frequencies for an application not considered to be radio communications (for example a microwave oven) shall be designed, constructed, manufactured, installed and maintained in accordance with good engineering practice and shall:

1. Not radiate electro magnetic emissions at such a level that causes harmful and sustained interference to other electrical equipment or radiocommunications services operating in accordance with the NFP; and
2. Operate as intended in the presence of electro magnetic fields arising from unintentional radiators or any radiocommunications station operating legally in the Kingdom of Bahrain.

Where problems or disputes arise from unintentional RF emissions, and until EMC regulations are in force, the operator of the suspected source of unintentional emissions may be required by the relevant spectrum licensing body in Bahrain to demonstrate the conformity of the equipment in question with the EMC or 'unintentional radiator' regulatory requirements in force in a state or country acceptable to the licensing body. Similarly, the operator of the equipment experiencing interference from intentional or unintentional RF emissions may be required by the relevant spectrum licensing body in Bahrain to demonstrate the conformity of the equipment in question with the EMC regulatory requirements in force in a state or country acceptable to the licensing body.

The spectrum licensing body may also require other remedial action by the owner of unintentional radiators or equipment causing harmful and sustained interference to radiocommunications services.

3. NFP - Details

The NFP is based on current and expected spectrum requirements in the Kingdom for the foreseeable future. Where a longer term implementation is expected, this is mentioned in the remarks column. It is expected that the NFP will be implemented in part or in whole, as soon as is practicably possible.

It is expected that the NFP will be used as a source document by importers, manufacturers, and users of radiocommunications equipment as well as by foreign administrations and regional telecommunication organizations.

Frequency allocations are not static and will change from time to time as new radio systems are introduced and old ones phased out. Changes on spectrum utilization will also occur at the international level or as a consequence of national decisions made to meet specific national requirements. The NFP will therefore be reviewed and updated periodically and the SSCC will, in consultation with its members, review and revise as the NFP before and immediately after an International Telecommunication Union (ITU) World Radiocommunication Conference (WRC) or subsequent to any frequency harmonisation initiative of the Gulf Co-operation Council (GCC) or the Arab Spectrum Management Group (ASMG).

National developments which may lead to a revision to the NFP may include, for example:

- Decisions to adopt new technologies by the SSCC,
- Requests to update technology by incumbent users,
- Changing demands for different radio-based applications,
- Requirements arising from service based national consultative committees.

The activities of other United Nations specialized agencies are also relevant, in particular the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). Since radio frequencies do not respect national borders it is also necessary to take account of spectrum usage in neighbouring States.

4. Construction of the NFP

The NFP comprises five individual columns:

Column 1: indicates the frequency band in kilohertz (kHz), Megahertz (MHz) and Gigahertz (GHz) referenced in subsequent rows of the Frequency Table

Column 2: RR Region 1 allocations and relevant footnotes

This column contains details of the allocations to radiocommunication services pertaining to the frequency band in question within the ITU Radio Regulations (RR) for Region 1, the geographical (ITU) region in which the Kingdom of Bahrain is located. Included are:

- Current RR Article 5 allocations which correspond to Region 1 and are generic in nature
- Current RR Article 5 footnotes which are relevant to GCC countries and neighbouring States and the Kingdom in particular, which are in bold text.

See also Annex 2 for details of the RR Article 5 footnotes mentioned in Column 2.

Column 3: The Kingdom's National Frequency Allocations

For each frequency band:

- Expected allocations to radiocommunications services in the Kingdom
- RR Art. 5 footnotes as per Column 2
- Bahrain national footnotes relevant to the frequency band in question.

See also Annex 3 for full details of Bahrain's national footnotes mentioned in Column 3.

Column 4: Major Utilisation

Where appropriate, this column states for a frequency band and particular service the major uses of the spectrum. However mention of utilisations within a specific radiocommunications service does not preclude the use of other services mentioned in the NFP i.e. Column 3.

Column 5: Additional Information

In this column details are provided of frequency plans and channel arrangements utilised in the Kingdom as well as any pairing arrangements between bands. Reference may also be made to European, ITU or other regulatory texts, where the contents have been adopted in the Kingdom. In addition other relevant information may also be included in this Column.

Column 2 therefore reflects the band and services determined in the ITU Radio Regulations, a treaty based document. Column 3 indicates the services in a particular band proposed for the Kingdom. In the majority of cases they are the same or a sub-set of the Column 2 ITU designated services. Where they are not, details are generally found in a national footnote (BHR etc). The reason may be practice in a neighbouring country or region and consequentially it has been considered preferable to use the frequencies in the Kingdom in the same or a similar manner.

Column 4 is the utilisation column where the possible uses of a frequency band in the Kingdom can be found. Column 5 provides useful information on the channelling and pairing of frequencies as well as other pertinent references or parameters.

5. Key ITU Definitions

The following definitions are reproduced from the ITU Radio Regulations (RR) and are relevant in the context of the NFP:

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

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

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

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

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

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

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

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

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

5.10 Primary Services: Radiocommunication services detailed in columns 2 and 3 of the NFP which are in upper case letters (e.g. MOBILE) have primary status, the highest category of 'access' to radio frequencies;

5.11 Secondary Services: Radiocommunication services detailed in columns 2 and 3 of the NFP which are in lower case letters (e.g. Mobile) have secondary status;

5.11.1 Stations of a secondary service:

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

5.11.2 When more than one service is listed as having the same status, the order of their listing does not indicate any relative priority among the listed services.

National Frequency Plan

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
9-110 kHz	Below 9 (Not allocated) 5.53 5.54	Below 9 (Not allocated) 5.53 5.54, BHR20		
	9-14 RADIONAVIGATION	9-14 RADIONAVIGATION		
	14-19.95 FIXED MARITIME MOBILE 5.57 5.55 5.56	14-19.95 FIXED MARITIME MOBILE 5.57 5.56		
	19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)		
	20.05-70 FIXED MARITIME MOBILE 5.57 5.56 5.58	20.05-70 FIXED MARITIME MOBILE 5.57 5.56		
	70-72 RADIONAVIGATION 5.60	70-72 RADIONAVIGATION 5.60		
	72-84 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	72-84 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56		
	84-86 RADIONAVIGATION 5.60	84-86 RADIONAVIGATION 5.60		
	86-90 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	86-90 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56		
	90-110 RADIONAVIGATION 5.62 Fixed 5.64	90-110 RADIONAVIGATION 5.62 Fixed 5.64		
110-255 kHz	110-112 FIXED MARITIME MOBILE RADIONAVIGATION 5.64	110-112 FIXED MARITIME MOBILE RADIONAVIGATION 5.64		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	112-115 RADIONAVIGATION 5.60	112-115 RADIONAVIGATION 5.60		
	115-117.6 RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	115-117.6 RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64		
	117.6-126 FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	117.6-126 FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64, BHR2		
	126-129 RADIONAVIGATION 5.60	126-129 RADIONAVIGATION 5.60		
	129-130 FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	129-130 FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64		
	130-135.7 FIXED MARITIME MOBILE 5.64 5.67	130-135.7 FIXED MARITIME MOBILE 5.64 BHR2		
	135.7-137.8 FIXED MARITIME MOBILE Amateur 5.67A 5.64 5.67 5.67B	135.7-137.8 FIXED MARITIME MOBILE Amateur 5.67A 5.64 5.67B, BHR2	Amateur Radio	
	137.8-148.5 FIXED MARITIME MOBILE 5.64 5.67 148.5-255 BROADCASTING 5.68 5.69 5.70	130-148.5 FIXED MARITIME MOBILE 5.64, BHR2 148.5-255 BROADCASTING		
255-495 kHz	255-283.5 BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70 5.71	255-283.5 BROADCASTING AERONAUTICAL RADIONAVIGATION		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	283.5-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION radiobeacons) 5.73 5.72 5.74	283.5-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION radiobeacons) 5.73 5.74		
	315-325 AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.72 5.75	315-325 AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73		
	325-405 AERONAUTICAL RADIONAVIGATION 5.72	325-405 AERONAUTICAL RADIONAVIGATION	Aeronautical radionavigation NDB and navigational systems	
	405-415 RADIONAVIGATION 5.76 5.72	405-415 RADIONAVIGATION 5.76		
	415-435 MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72	415-435 MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72		
	435-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation	435-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation	Government and public operator maritime mobile systems	
495-2000 kHz	495-505 MOBILE 5.82A 5.82B	495-505 MOBILE 5.82A 5.82B, BHR3		
	505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION 5.72	505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION 5.72	518kHz for NAVTEX	
	526.5-1 606.5 BROADCASTING 5.87 5.87A	526.5-1 606.5 BROADCASTING	Medium frequency (MF) AM broadcasting	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	1 606.5-1 625 FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	1 606.5-1 625 FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92		
	1 625-1 635 RADIOLOCATION 5.93	1 625-1 635 RADIOLOCATION		
	1 635-1 800 FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	1 635-1 800 FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96		
	1 800-1 810 RADIOLOCATION 5.93	1 800-1 810 RADIOLOCATION 5.93		
	1 810-1 850 AMATEUR 5.98 5.99 5.100 5.101	1 810-1 850 AMATEUR 5.99 5.100	Amateur Radio	
	1 850-2 000 FIXED MOBILE except aeronautical mobile 5.92 5.96 5.103	1 850-2 000 FIXED MOBILE except aeronautical mobile Amateur 5.92 5.103, BHR4	Amateur Radio	
2000- 2498 kHz	2 000-2 025 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	2 000-2 025 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103		
	2 025-2 045 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	2 025-2 045 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103		
	2 045-2 160 FIXED MARITIME MOBILE LAND MOBILE 5.92	2 045-2 160 FIXED MARITIME MOBILE LAND MOBILE 5.92	Government and private maritime mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	2 160-2 170 RADIOLOCATION 5.93 5.107	2 160-2 170 RADIOLOCATION		
	2 170-2 173.5 MARITIME MOBILE	2 170-2 173.5 MARITIME MOBILE		
	2 173.5-2 190.5 MOBILE (distress and calling) 5.108 5.109 5.110 5.111	2 173.5-2 190.5 MOBILE (distress and calling) 5.108 5.109 5.110 5.111	DISTRESS AND CALLING	
	2 190.5-2 194 MARITIME MOBILE	2 190.5-2 194 MARITIME MOBILE		
	2 194-2 300 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.112	2 194-2 300 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Private and government mobile	
2 300 – 3 155 kHz	2 300-2 498 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	2 300-2 498 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	Private and government mobile	
	2 498-2 501 STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	2 498-2 501 STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)		
	2 501-2 502 STANDARD FREQUENCY AND TIME SIGNAL Space Research	2 501-2 502 STANDARD FREQUENCY AND TIME SIGNAL Space Research		
	2 502-2 625 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.114	2 502-2 625 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.114	Public and government maritime	
	2 625-2 650 MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	2 625-2 650 MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	Public, private and government maritime	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	2 650-2 850 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	2 650-2 850 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Government, public, private fixed and mobile	
	2 850-3 025 AERONAUTICAL MOBILE (R) 5.111 5.115	2 850-3 025 AERONAUTICAL MOBILE (R) 5.111 5.115	Aeronautical mobile on- route safety and operational	
	3 025-3 155 AERONAUTICAL MOBILE (OR)	3 025-3 155 AERONAUTICAL MOBILE (OR)	Government and private aeronautical off-route	
3 155- 4 000 kHz	3 155-3 200 FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	3 155-3 200 FIXED MOBILE except aeronautical mobile (R) 5.116	Government fixed	
	3 200-3 230 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	3 200-3 230 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	Government fixed	
	3 230-3 400 FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118	3 230-3 400 FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116	Government and private fixed and mobile	
	3 400-3 500 AERONAUTICAL MOBILE (R)	3 400-3 500 AERONAUTICAL MOBILE (R)	Private and government on-route aeronautical mobile	
	3 500-3 800 AMATEUR FIXED MOBILE except aeronautical Mobile 5.92	3 500-3 800 AMATEUR FIXED MOBILE except aeronautical mobile 5.92	Government fixed and mobile and amateur radio	
	3 800-3 900 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	3 800-3 900 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Government off-route aeronautical mobile Government and civil fixed and land-mobile	
	3 900-3 950 AERONAUTICAL MOBILE (OR) 5.123	3 900-3 950 AERONAUTICAL MOBILE (OR)	Government off-route aeronautical mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	3 950-4 000 FIXED BROADCASTING	3 950-4 000 FIXED BROADCASTING	Government fixed	
4 000 - 5 005 kHz	4 000-4 063 FIXED MARITIME MOBILE 5.127 5.126	4 000-4 063 FIXED MARITIME MOBILE 5.127	Private fixed	
	4 063-4 438 MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	4 063-4 438 MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	Government, private and public maritime mobile	
	4 438-4 650 FIXED MOBILE except aeronautical mobile (R)	4 438-4 650 FIXED MOBILE except aeronautical mobile (R)	Government and private fixed and mobile	
	4 650-4 700 AERONAUTICAL MOBILE (R)	4 650-4 700 AERONAUTICAL MOBILE (R)	Private and government on-route aeronautical mobile	
	4 700-4 750 AERONAUTICAL MOBILE (OR)	4 700-4 750 AERONAUTICAL MOBILE (OR)	Government and private off-route aeronautical mobile	
	4 750-4 850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	4 750-4 850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	Government land mobile	
	4 850-4 995 FIXED LAND MOBILE BROADCASTING 5.113	4 850-4 995 FIXED LAND MOBILE BROADCASTING 5.113	Government and private fixed and land mobile	
	4 995-5 003 STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	4 995-5 003 STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	Civil	
	5 003-5 005 STANDARD FREQUENCY AND TIME SIGNAL Space research	5 003-5 005 STANDARD FREQUENCY AND TIME SIGNAL Space research	Civil	
5 000 - 6 685 kHz	5 005-5 060 FIXED BROADCASTING 5.113	5 005-5 060 FIXED BROADCASTING 5.113		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	5 060-5 250 FIXED Mobile except aeronautical mobile 5.133	5 060-5 250 FIXED Mobile except aeronautical mobile	Civil private fixed and mobile	
	5 250-5 450 FIXED MOBILE except aeronautical mobile	5 250-5 450 FIXED MOBILE except aeronautical mobile BHR3	Government and private fixed and mobile	
	5 450-5 480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	5 450-5 480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Government	
	5 480-5 680 AERONAUTICAL MOBILE (R) 5.111 5.115	5 480-5 680 AERONAUTICAL MOBILE (R) 5.111 5.115	Government and private off-route aeronautical mobile	
	5 680-5 730 AERONAUTICAL MOBILE (OR) 5.111 5.115	5 680-5 730 AERONAUTICAL MOBILE (OR) 5.111 5.115	Government	
	5 730-5 900 FIXED LAND MOBILE	5 730-5 900 FIXED LAND MOBILE	Civil private fixed and land mobile	
	5 900-5 950 BROADCASTING 5.134 5.136	5 900-5 950 BROADCASTING 5.134	HF broadcasting	
	5 950-6 200 BROADCASTING	5 950-6 200 BROADCASTING	HF broadcasting	
	6 200-6 525 MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	6 200-6 525 MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	Government and private use for maritime mobile	
	6 525-6 685 AERONAUTICAL MOBILE (R)	6 525-6 685 AERONAUTICAL MOBILE (R)	Government and private on-route aeronautical mobile	
6 685 – 8 815 kHz	6 685-6 765 AERONAUTICAL MOBILE (OR)	6 685-6 765 AERONAUTICAL MOBILE (OR)	Private off-route aeronautical mobile	
	6 765-7 000 FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A	6 765-7 000 FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A	Private fixed	
	7 000-7 100 AMATEUR AMATEUR-SATELLITE	7 000-7 100 AMATEUR AMATEUR-SATELLITE	Amateur radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	7 100-7 200 AMATEUR 5.141B 5.141C 5.142	7 100-7 200 FIXED Amateur Mobile except aeronautical mobile (R) 5.141B 5.141C 5.142	Civil fixed Amateur radio	
	7 200-7 300 BROADCASTING	7 200-7 300 BROADCASTING	Broadcasting	
	7 300-7 400 BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	7 300-7 400 BROADCASTING 5.134 FIXED 5.143 5.143B 5.143C	Government fixed and broadcasting	
	7 400-7 450 BROADCASTING 5.143B 5.143C	7 400-7 450 BROADCASTING FIXED 5.143B 5.143C	Government fixed and broadcasting	
	7 450-8 100 FIXED MOBILE except aeronautical mobile (R) 5.143E 5.144	7 450-8 100 FIXED MOBILE except aeronautical mobile (R) 5.143E	Government and private fixed and mobile	
	8 100-8 195 FIXED MARITIME MOBILE	8 100-8 195 FIXED MARITIME MOBILE	Civil maritime mobile	
	8 195-8 815 MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	8 195-8 815 MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	Government and public maritime mobile	
8 815 – 11 400 kHz	8 815-8 965 AERONAUTICAL MOBILE (R)	8 815-8 965 AERONAUTICAL MOBILE (R)	Government and civil on- route aeronautical mobile	
	8 965-9 040 AERONAUTICAL MOBILE (OR)	8 965-9 040 AERONAUTICAL MOBILE (OR)	Civil private off-route aeronautical mobile	
	9 040-9 400 FIXED	9 040-9 400 FIXED	Private and government fixed	
	9 400-9 500 BROADCASTING 5.134 5.146	9 400-9 500 BROADCASTING 5.134	Broadcasting	
	9 500-9 900 BROADCASTING 5.147	9 500-9 900 BROADCASTING	Broadcasting	
	9 900-9 995 FIXED	9 900-9 995 FIXED	Government fixed	
	9 995-10 003 STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	9 995-10 003 STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	Civil	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	10 003-10 005 STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	10 003-10 005 STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	Civil	
	10 005-10 100 AERONAUTICAL MOBILE (R) 5.111	10 005-10 100 AERONAUTICAL MOBILE (R) 5.111	Government and civil on- route aeronautical mobile	
	10 100-10 150 FIXED Amateur	10 100-10 150 FIXED Amateur	Private fixed and amateur radio	
	10 150-11 175 FIXED Mobile except aeronautical mobile (R)	10 150-11 175 FIXED Mobile except aeronautical mobile (R) BHR2	Private and government fixed and mobile	
	11 175-11 275 AERONAUTICAL MOBILE (OR)	11 175-11 275 AERONAUTICAL MOBILE (OR)	Civil private off–route aeronautical mobile	
	11 275-11 400 AERONAUTICAL MOBILE (R)	11 275-11 400 AERONAUTICAL MOBILE (R)	Government and civil on- route aeronautical mobile	
11 400- 13 870 kHz	11 400-11 600 FIXED	11 400-11 600 FIXED	Government and civil private fixed	
	11 600-11 650 BROADCASTING 5.134 5.146	11 600-11 650 BROADCASTING 5.134 5.146	HF Broadcasting	
	11 650-12 050 BROADCASTING 5.147	11 650-12 050 BROADCASTING	HF Broadcasting	
	12 050-12 100 BROADCASTING 5.134 5.146	12 050-12 100 BROADCASTING 5.134 5.146	HF Broadcasting	
	12 100-12 230 FIXED	12 100-12 230 FIXED	Private fixed	
	12 230-13 200 MARITIME MOBILE 5.109 5.110 5.132 5.145	12 230-13 200 MARITIME MOBILE 5.109 5.110 5.132 5.145	Government and public maritime mobile	
	13 200-13 260 AERONAUTICAL MOBILE (OR)	13 200-13 260 AERONAUTICAL MOBILE (OR)	Private off-route aeronautical mobile	
	13 260-13 360 AERONAUTICAL MOBILE (R)	13 260-13 360 AERONAUTICAL MOBILE (R)	Government and civil on- route aeronautical mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	13 360-13 410 FIXED RADIO ASTRONOMY 5.149	13 360-13 410 FIXED RADIO ASTRONOMY 5.149	Private fixed	
	13 410-13 570 FIXED Mobile except aeronautical mobile (R) 5.150	13 410-13 570 FIXED MOBILE except aeronautical mobile (R) 5.150, BHR1,BHR2	Government and civil private mobile ISM band 13 553 - 13 567 kHz	
	13 570-13 600 BROADCASTING 5.134 5.151	13 570-13 600 BROADCASTING Fixed 5.134 5.151	HF Broadcasting and private fixed	
	13 600-13 800 BROADCASTING	13 600-13 800 BROADCASTING	HF Broadcasting	
	13 800-13 870 BROADCASTING 5.134 5.151	13 800-13 870 BROADCASTING Fixed 5.134 5.151	Government and HF broadcasting	
13 870 - 17 480 kHz	13 870-14 000 FIXED Mobile except aeronautical mobile (R)	13 870-14 000 FIXED Mobile except aeronautical mobile (R)	Private and government mobile	
	14 000-14 250 AMATEUR AMATEUR-SATELLITE	14 000-14 250 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	14 250-14 350 AMATEUR 5.152	14 250-14 350 AMATEUR 5.152	Amateur radio	
	14 350-14 990 FIXED Mobile except aeronautical mobile (R)	14 350-14 990 FIXED Mobile except aeronautical mobile (R)	Private fixed and mobile	
	14 990-15 005 STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	14 990-15 005 STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111		
	15 005-15 010 STANDARD FREQUENCY AND TIME SIGNAL Space research	15 005-15 010 STANDARD FREQUENCY AND TIME SIGNAL Space research		
	15 010-15 100 AERONAUTICAL MOBILE (OR)	15 010-15 100 AERONAUTICAL MOBILE (OR)	Private and government off-route aeronautical mobile	
	15 100-15 600 BROADCASTING	15 100-15 600 BROADCASTING	Broadcasting	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	15 600-15 800 BROADCASTING 5.134 5.146	15 600-15 800 BROADCASTING 5.134 Fixed 5.146	Broadcasting	
	15 800-16 360 FIXED 16 360-17 410 MARITIME MOBILE 5.109 5.110 5.132 5.145	15 800-16 360 FIXED 16 360-17 410 MARITIME MOBILE 5.109 5.110 5.132 5.145	Private fixed Government and private and public maritime mobile	
	17 410-17 480 FIXED	17 410-17 480 FIXED	Government and civil	
17 480 – 19 995 kHz	17 480-17 550 BROADCASTING 5.134 5.146	17 480-17 550 BROADCASTING 5.134 Fixed 5.146	HF Broadcasting	
	17 550-17 900 BROADCASTING	17 550-17 900 BROADCASTING	HF Broadcasting	
	17 900-17 970 AERONAUTICAL MOBILE (R)	17 900-17 970 AERONAUTICAL MOBILE (R)	Government and civil on route aeronautical mobile	
	17 970-18 030 AERONAUTICAL MOBILE (OR)	17 970-18 030 AERONAUTICAL MOBILE (OR)	Private off route aeronautical mobile	
	18 030-18 052 FIXED	18 030-18 052 FIXED	Government fixed	
	18 052-18 068 FIXED Space research	18 052-18 068 FIXED Space research	Civil fixed	
	18 068-18 168 AMATEUR AMATEUR-SATELLITE 5.154	18 068-18 168 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	18 168-18 780 FIXED Mobile except aeronautical mobile	18 168-18 780 FIXED Mobile except aeronautical mobile	Private fixed	
	18 780-18 900 MARITIME MOBILE	18 780-18 900 MARITIME MOBILE	Government and Civil usage	
	18 900-19 020 BROADCASTING 5.134 5.146	18 900-19 020 BROADCASTING 5.134 Fixed 5.146	Private fixed	
	19 020-19 680 FIXED	19 020-19 680 FIXED		
	19 680-19 800 MARITIME MOBILE 5.132	19 680-19 800 MARITIME MOBILE 5.132	Public maritime mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	19 800-19 990 FIXED	19 800-19 990 FIXED		
	19 990-19 995 STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	19 990-19 995 STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111		
19 995 - 24 000 kHz	19 995-20 010 STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	19 995-20 010 STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111		
	20 010-21 000 FIXED Mobile	20 010-21 000 FIXED Mobile	Government and private fixed and mobile	
	21 000-21 450 AMATEUR AMATEUR-SATELLITE	21 000-21 450 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	21 450-21 850 BROADCASTING	21 450-21 850 BROADCASTING	HF Broadcasting	
	21 850-21 870 FIXED 5.155A 5.155	21 850-21 870 FIXED 5.155A		
	21 870-21 924 FIXED 5.155B	21 870-21 924 FIXED 5.155B	Government fixed	
	21 924-22 000 AERONAUTICAL MOBILE (R)	21 924-22 000 AERONAUTICAL MOBILE (R)	Civil and government on- route aeronautical mobile	
	22 000-22 855 MARITIME MOBILE 5.132 5.156	22 000-22 855 MARITIME MOBILE 5.132	Government and private and public maritime mobile	
	22 855-23 000 FIXED 5.156	22 855-23 000 FIXED 5.156	Private fixed	
	23 000-23 200 FIXED Mobile except aeronautical mobile (R) 5.156	23 000-23 200 FIXED Mobile except aeronautical mobile (R) 5.156	Government and private fixed and mobile	
	23 200-23 350 FIXED 5.156A AERONAUTICAL MOBILE (OR)	23 200-23 350 FIXED 5.156A AERONAUTICAL MOBILE (OR)		
	23 350-24 000 FIXED MOBILE except aeronautical mobile 5.157	23 350-24 000 FIXED MOBILE except aeronautical mobile 5.157	Private fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
24 000 – 27 500 kHz	24 000-24 890 FIXED LAND MOBILE	24 000-24 890 FIXED LAND MOBILE	Private fixed	
	24 890-24 990 AMATEUR AMATEUR-SATELLITE	24 890-24 990 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	24 990-25 005 STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	24 990-25 005 STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		
	25 005-25 010 STANDARD FREQUENCY AND TIME SIGNAL Space research	25 005-25 010 STANDARD FREQUENCY AND TIME SIGNAL Space research		
	25 010-25 070 FIXED MOBILE except aeronautical mobile	25 010-25 070 FIXED MOBILE except aeronautical mobile	Government fixed and mobile	
	25 070-25 210 MARITIME MOBILE	25 070-25 210 MARITIME MOBILE	Government and Civil	
	25 210-25 550 FIXED MOBILE except aeronautical mobile	25 210-25 550 FIXED MOBILE except aeronautical mobile	Government and private fixed and mobile	
	25 550-25 670 RADIO ASTRONOMY 5.149	25 550-25 670 RADIO ASTRONOMY 5.149		
	25 670-26 100 BROADCASTING	25 670-26 100 BROADCASTING	HF Broadcasting	
	26 100-26 175 MARITIME MOBILE 5.132	26 100-26 175 MARITIME MOBILE 5.132	Private maritime mobile	
	26 175-27 500 FIXED MOBILE except aeronautical mobile 5.150	26 175-27 500 FIXED MOBILE except aeronautical mobile 5.150	Government and civil private fixed and mobile ISM band 26 957- 27 283 kHz CB 26 965 -27405 kHz	
27.5 – 40.98 MHz	27.5-28 METEOROLOGICAL AIDS FIXED MOBILE	27.5-28 METEOROLOGICAL AIDS FIXED MOBILE	Government and civil private mobile	
	28-29.7 AMATEUR AMATEUR-SATELLITE	28-29.7 AMATEUR AMATEUR-SATELLITE	Amateur radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information	
	29.7-30.005 FIXED MOBILE	29.7-30.005 FIXED MOBILE			
	30.005-30.01 SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	30.005-30.01 SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH			
	30.01-37.5 FIXED MOBILE	30.01-37.5 FIXED MOBILE	Government and civil private fixed and mobile		
	37.5-38.25 FIXED MOBILE Radio astronomy 5.149	37.5-38.25 FIXED MOBILE Radio astronomy 5.149			
	38.25-39.986 FIXED MOBILE	38.25-39.986 FIXED MOBILE			
	39.986-40.02 FIXED MOBILE Space research	39.986-40.02 FIXED MOBILE Space research			
	40.02-40.98 FIXED MOBILE 5.150	40.02-40.98 FIXED MOBILE 5.150	Government fixed and mobile ISM band 40.66-40.70 MHz		
40.98 – 87.5 MHz	40.98-41.015 FIXED MOBILE Space research 5.160 5.161	40.98-41.015 FIXED MOBILE Space research 5.160 5.161	Government fixed and mobile		
	41.015-44 FIXED MOBILE 5.160 5.161	41.015-44 FIXED MOBILE	Government and private mobile		
	44-47 FIXED MOBILE 5.162 5.162A	44-47 FIXED MOBILE BHR5	Government and private fixed and mobile		
	47-68 BROADCASTING	47- 50 LAND MOBILE BHR5, BHR6	47- 50 LAND MOBILE BHR5, BHR6	Future low power devices	
		50 – 50.5 AMATEUR BHR7,BHR5	50 – 50.5 AMATEUR BHR7,BHR5	Amateur radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
		50.5 - 52 LAND MOBILE Amateur BHR5,BHR6,BHR7	Government mobile and amateur radio	
		52 – 61 LAND MOBILE BHR5,BHR6	SAB	
	5.162A 5.163 5.164 5.165 5.169 5.171	61 – 68 BROADCASTING	CH4 TV analogue broadcasting	
	68-74.8 FIXED MOBILE except aeronautical Mobile 5.149 5.175 5.177 5.179	68-74.8 FIXED MOBILE except aeronautical mobile 5.149,BHR3	Government fixed and private mobile	
	74.8-75.2 AERONAUTICAL RADIONAVIGATION 5.180 5.181	74.8-75.2 AERONAUTICAL RADIONAVIGATION 5.180	Government and civil aeronautical radionavigation middle marker beacons	
	75.2-87.5 FIXED MOBILE except aeronautical Mobile 5.175 5.179 5.184 5.187	75.2-87.5 FIXED MOBILE except aeronautical mobile 5.187	Government fixed and mobile	
87.5 - 137.175 MHz	87.5-100 BROADCASTING 5.190 100-108 BROADCASTING 5.192 5.194	87.5-100 BROADCASTING , 100-108 BROADCASTING ,	FM Broadcasting	
	108-117.975 AERONAUTICAL RADIONAVIGATION 5.197 5.197A	108-117.975 AERONAUTICAL RADIONAVIGATION 5.197A,BHR8	Government and civil aeronautical radionavigation Localiser/VOR	
	117.975-137 AERONAUTICAL MOBILE (R) 5.111 5.200 5.201 5.202	117.975-137 AERONAUTICAL MOBILE (R) 5.111 5.200 5.201 5.202, BHR9	Government and on-route aeronautical mobile VOLMET/ATC	
	137-137.025 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.347A SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137-137.025 FIXED MOBILE except aeronautical mobile (R) 5.204	Private mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	137.025-137.175 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.209 5.347A Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137.025-137.175 FIXED MOBILE except aeronautical mobile (R) 5.204	Government and private mobile	
137.175-143.65 MHz	137.175-137.825 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.347A SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137.175-137.825 FIXED MOBILE except aeronautical mobile (R) 5.204	Government and private mobile	
	137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.209 5.347A Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137.825-138 FIXED MOBILE except aeronautical mobile (R) 5.204	Private mobile	
	138-143.6 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	138-143.6 AERONAUTICAL MOBILE (OR) LAND MOBILE MARITIME MOBILE 5.211	Government and private off route aeronautical mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	143.6-143.65 AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	143.6-143.65 AERONAUTICAL MOBILE (OR) LAND MOBILE MARITIME MOBILE 5.211	Government and private off route aeronautical mobile	
143.65 - 153 MHz	143.65-144 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	143.65-144 AERONAUTICAL MOBILE (OR) LAND MOBILE MARITIME MOBILE 5.211	Government and private off route aeronautical mobile	
	144-146 AMATEUR AMATEUR-SATELLITE 5.216	144-146 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	146-148 FIXED MOBILE except aeronautical mobile (R)	146-148 FIXED MOBILE except aeronautical mobile (R)	Government and private fixed and mobile	
	148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	Government and private fixed and mobile	
	149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223		
	150.05-153 FIXED MOBILE except aeronautical Mobile RADIO ASTRONOMY 5.149	150.05-153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	Government and private fixed and mobile	
153 – 223 MHz	153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	Government and private fixed and mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	154-156.4875 FIXED MOBILE except aeronautical mobile (R) 5.226	154-156.4875 FIXED MOBILE except aeronautical mobile (R) 5.226	Government and private fixed and mobile. Public maritime channels	
	156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	Distress and calling - DSC	
	156.5625-156.7625 FIXED MOBILE except aeronautical mobile (R) 5.226	156.5625-156.7625 FIXED MOBILE except aeronautical mobile (R) 5.226	Government and private fixed and mobile. Public maritime channels	
	156.7625-156.8375 MARITIME MOBILE (distress and calling) 5.111 5.226	156.7625-156.8375 MARITIME MOBILE (distress and calling) 5.111 5.226	Distress and calling (156.8 MHz)	
	156.8375-174 FIXED MOBILE except aeronautical Mobile 5.226 5.227A 5.229	156.8375-174 FIXED MOBILE except aeronautical mobile 5.226 5.227A, BHR10	Government and civil private and public fixed and mobile Public & private maritime	
	174-223 BROADCASTING 5.235 5.237 5.243	174-223 BROADCASTING Land Mobile	Broadcasting Band III analogue & digital TV & DAB. GE06 Plan SAB	
223 – 315 MHz	223-230 BROADCASTING Fixed Mobile 5.243 5.246 5.247	223-230 AERONAUTICAL RADIONAVIGATION BROADCASTING Fixed Mobile 5.247	Broadcasting Band III analogue & digital TV & DAB. GE06 Plan SAB	
	230-235 FIXED MOBILE 5.247 5.251 5.252	230-235 AERONAUTICAL RADIONAVIGATION FIXED MOBILE 5.247	Government and private fixed and mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	235-267 FIXED MOBILE 5.111 5.199 5.252 5.254 5.256	235-267 FIXED MOBILE 5.254	Government and private fixed and mobile	
	267-272 FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	267-272 FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	Government and private fixed and mobile	
	272-273 SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	272-273 SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	Government fixed	
	273-312 FIXED MOBILE 5.254	273-312 FIXED MOBILE 5.254, BHR2	Government and private fixed and mobile	
	312-315 FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	312-315 FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255, BHR2	Government and private mobile 315 MHz Bahrain keyless system	
315-400.05 MHz	315-322 FIXED MOBILE 5.254	315-322 FIXED MOBILE 5.254, BHR2	Government and private fixed and mobile	
	322-328.6 FIXED MOBILE RADIO ASTRONOMY 5.149	322-328.6 FIXED MOBILE RADIO ASTRONOMY 5.149	Government and private fixed and mobile	
	328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258 5.259	328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258	Civil and government aeronautical radionavigation glide path	
	335.4-387 FIXED MOBILE 5.254	335.4-387 FIXED MOBILE 5.254, BHR21,BHR12	Government and private fixed and mobile 350: 'walkie-talkie' private mobile radio 380-385 MHz: TETRA emergency system PPDR	Paired with 390-395 MHz

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	387-390 FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255 5.347A	387-390 FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255 5.347A, BHR21,BHR12	Government fixed and mobile PPDR	
	390-399.9 FIXED MOBILE 5.254	390-399.9 FIXED MOBILE 5.254, BAH13,BHR21, BHR12	Government fixed and mobile. 390-395 MHz:TETRA emergency system PPDR	Paired with 380-385 MHz
	399.9-400.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220	399.9-400.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220		
400.05 – 402 MHz	400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL- SATELLITE (400.1 MHz) 5.261 5.262	400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL SATELLITE (400.1 MHz) 5.261 FIXED MOBILE 5.262		
	400.15-401 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.347A SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	400.15-401 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.347A SPACE RESEARCH (space-to-Earth) 5.263 FIXED MOBILE Space operation (space-to-Earth) 5.262 5.264		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	401-402 METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	401-402 METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	Government mobile	
402 – 430 MHz	402-403 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	402-403 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile BHR2		
	403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	Government and private fixed and mobile	
	406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.266 5.267	406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.266 5.267	406.0500 MHz COSPAS-SARSAT	
	406.1-410 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	406.1-410 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	Government and private fixed and mobile	
	410-420 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	410-420 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268, BHR13	Government and private fixed and mobile including TETRA	May be paired with 420 -430 MHz
	420-430 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.271	420-430 FIXED MOBILE except aeronautical mobile Radiolocation BHR13	Government and private fixed and mobile including TETRA	May be paired with 410 -420 MHz

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
430 – 460 MHz	430-440 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	430-440 FIXED MOBILE except aeronautical mobile AMATEUR RADIOLOCATION 5.138 5.276 5.282, BHR2	Government and civil private/public fixed and mobile Amateur radio: PAMR	
	440-450 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	440-450 FIXED MOBILE except aeronautical mobile Radiolocation 5.286	Government and civil private/public fixed and mobile PAMR	
	450-455 FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	450-455 FIXED MOBILE 5.286AA 5.209 5.286 5.286A 5.286B, BHR11	Government and civil private/public fixed and mobile	May be paired with 460-465 MHz
	455-456 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	455-456 FIXED MOBILE 5.286AA 5.209 5.286A 5.286B BHR11	Government and civil private/public fixed and mobile	May be paired with 465-466 MHz
	456-459 FIXED MOBILE 5.286AA 5.271 5.287 5.288	456-459 FIXED MOBILE 5.286AA 5.287, BHR11	Government and civil private/public fixed and mobile	May be paired with 466-469 MHz
	459-460 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	459-460 FIXED MOBILE 5.286AA 5.209 5.286A 5.286B BHR11	Government and private/public fixed and mobile	May be paired with 469-470 MHz
460-960 MHz	460-470 FIXED MOBILE 5.286AA Meteorological-Satellite (space-to-Earth) 5.287 5.288 5.289 5.290	460-470 FIXED MOBILE 5.286AA Meteorological-Satellite (space-to-Earth) 5.287 5.289, BHR11	Government and private/public fixed and mobile	May be paired with 450-460 MHz

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	470-790 BROADCASTING 5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311A 5.312	470-790 BROADCASTING Land mobile 5.149 5.296 5.306 5.311A, BHR2	Broadcasting Band IV/V analogue & digital TV GE06 Plan SAB	
	790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.312 5.314 5.315 5.316 5.316A 5.319	790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.316 5.319 BHR18	Private fixed Broadcasting Band IV/V analogue & digital TV GE06 Plan IMT candidate	
	862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.319 5.323	862-890 FIXED MOBILE except aeronautical mobile 5.317A BHR2,BHR14,BHR15	Private and public fixed and mobile EGSM900 IMT candidate >870 MHz	SRD 862-870 MHz 870-890 MHz paired with 915-935 MHz
	890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation 5.323	890-942 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation BHR15	Private and public fixed and mobile. 933.9200 MHz remote keyless sys. GSM900, EGSM900 & IMT candidate.	890-915 MHz paired with 935-960 MHz 3rd mobile licence incl GSM900 – 2x5.6 MHz
	942-960 FIXED MOBILE except aeronautical mobile 5.317A 5.323	942-960 FIXED MOBILE except aeronautical mobile 5.317A	Public fixed and Mobile. GSM900 & IMT candidate	
960 – 1300 MHz	960-1 164 AERONAUTICAL MOBILE (R) [5.4B06] AERONAUTICAL RADIONAVIGATION 5.328 1 164-1 215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION SATELLITE (space-to- Earth)(space-to-space) 5.328B 5.328A	960-1 164 AERONAUTICAL MOBILE (R) [5.4B06] AERONAUTICAL RADIONAVIGATION 5.328 1 164-1 215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION SATELLITE (space-to- Earth)(space-to-space) 5.328B 5.328A	Government and civil aeronautical radionavigation DME landing\ground reply\interrogation Government and civil aeronautical radionavigation DME landing\ground reply\interrogation	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	1 215-1 240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B SPACE RESEARCH (active) 5.330 5.331 5.332	1 215-1 240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B SPACE RESEARCH (active) FIXED MOBILE 5.330 5.331 5.332		
	1 240-1 300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.330 5.331 5.335 5.335A	1 240-1 300 EARTH EXPLORATION-SATELLITE (active) RADIONAVIGATION RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) FIXED MOBILE Amateur 5.330 5.331 5.335A	Government and private use for radiolocation and radionavigation-satellite	
1 300-1 492 MHz	1 300-1 350 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	1 300-1 350 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	Government radiolocation	
	1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.338A 5.339	1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338A 5.339		
	1 400-1 427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	1 400-1 427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	1 427-1 429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341	1 427-1 429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341	Public fixed	
	1 429-1 452 FIXED MOBILE except aeronautical Mobile 5.338A 5.341 5.342	1 429-1 452 FIXED MOBILE except aeronautical mobile 5.338A 5.341	Government and public fixed	
	1 452-1 492 FIXED MOBILE except aeronautical Mobile BROADCASTING 5.345 BROADCASTING- SATELLITE 5.345 5.347A 5.341 5.342	1 452-1 492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 BROADCASTING- SATELLITE 5.345 5.347A 5.341	Government and public fixed	
1 492- 1 559 MHz	1 492-1 518 FIXED MOBILE except aeronautical mobile 5.341 5.342	1 492-1 518 FIXED MOBILE except aeronautical mobile 5.341	Public fixed	
	1 518-1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	1 518-1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	IMT sat downlink	
	1 525-1 530 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	1 525-1 530 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 5.352A 5.354	Government fixed IMT sat downlink	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.351 5.354	IMT sat downlink GMDSS Distress and Safety	
	1 535-1 559 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	1 535-1 559 MOBILE-SATELLITE (space-to-Earth) 5.351A Fixed 5.355 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A 5.359	DISTRESS 1544-1545 MHz Fixed >1540 MHz IMT sat downlink	
1 559- 1 626.5 MHz	1 559-1 610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION- SATELLITE (space-to- Earth) (space-to-space) 5.328B 5.329A 5.341 5.362B 5.362C 5.363	1 559-1 610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION- SATELLITE (space-to- Earth) (space-to-space) 5.328B 5.329A 5.341 5.362B 5.362C	Government and civil radionavigation-satellite Galileo 1559.42-1591.42 MHz Glonass 1592.9- 1610.5 MHz GPS 1563.42-1587.42 MHz	
	1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Fixed 5.355 5.341 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	IMT sat uplink Glonass 1592.9-1610.5 Private fixed	
	1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A 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	1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Fixed 5.355 5.149 5.341 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	IMT sat uplink Private fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Fixed 5.355 5.341 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	IMT sat uplink Private fixed	
1 626.5-1 670 MHz	1 626.5-1 660 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	1 626.5-1 660 MOBILE-SATELLITE (Earth-to-space) 5.351A Fixed 5.355 5.341 5.351 5.353A 5.354 5.357A 5.359 5.374 5.375 5.376	IMT satellite uplink GMDSS Distress and Safety	
	1 660-1 660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	1 660-1 660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	IMT satellite uplink	
	1 660.5-1 668 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	1 660.5-1 668 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379A		
	1 668-1 668.4 RADIO ASTRONOMY SPACE RESEARCH (passive) MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	1 668-1 668.4 RADIO ASTRONOMY SPACE RESEARCH (passive) MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C Fixed Mobile except aeronautical mobile 5.149 5.341 5.379A	IMT satellite uplink	
	1 668.4-1 670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	1 668.4-1 670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	IMT satellite uplink	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
1670 – 1710 MHz	1 670-1 675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	1 670-1 675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	IMT satellite uplink	
	1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical Mobile 5.341	1 675-1 690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341		
	1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) FIXED 5.382 MOBILE except aeronautical mobile 5.289 5.341, BHR1	Government and civil meteorological aids	
	1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical Mobile 5.289 5.341	1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
1 710-2 025 MHz	1 710-1 930 FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	1 710-1 930 FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.388	Public fixed and mobile GSM1800 IMT candidate band (1710-1885 MHz) Op1 1735-1760 / 1830-1855 MHz, Op2 1780-1785 / 1875-1880 MHz GSM Guard band 1790 - 1795 MHz DECT 1880-1900 MHz IMT2000	1710-1785 MHz paired with 1805-1880 MHz 3rd mobile licence incl GSM1800 – 2x15 MHz IMT2000 TDD 1900-1920 MHz FDD 1920-1930 / 2110-2120 MHz
	1 930-1 970 FIXED MOBILE 5.388A 5.388	1 930-1 970 FIXED MOBILE 5.388A 5.388	Public fixed and mobile IMT2000 (FDD) 3 operators each with 2x15 MHz FDD & 5 MHz TDD	IMT2000 FDD 1930 – 1970 / 2120 – 2160 MHz
	1 970-1 980 FIXED MOBILE 5.388A 5.388	1 970-1 980 FIXED MOBILE 5.388A 5.388	IMT2000 (FDD)	IMT2000 FDD 1970 – 1980 / 2160 – 2170 MHz
	1 980-2 010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	1 980-2 010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	IMT2000 space segment	
	2 010-2 025 FIXED MOBILE 5.388A 5.388B 5.388	2 010-2 025 FIXED MOBILE 5.388A 5.388B 5.388	IMT2000 (TDD)	
2 025-2 200 MHz	2 025-2 110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	2 025-2 110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	Government mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	2 110-2 120 FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space) 5.388	2 110-2 120 FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space) 5.388	Public fixed and mobile IMT2000 (FDD) 3 operators each with 2x15 MHz FDD & 5 MHz TDD	IMT2000 FDD 2110-2120/1920-1930 MHz
	2 120-2 160 FIXED MOBILE 5.388A 5.388	2 120-2 160 FIXED MOBILE 5.388A 5.388	Public fixed and mobile	IMT2000 FDD 2120 – 2160 / 1930 – 1970MHz
	2 160-2 170 FIXED MOBILE 5.388A 5.388B 5.388	2 160-2 170 FIXED MOBILE 5.388A 5.388B 5.388		IMT2000 FDD 2160 – 2170 / 1970 – 1980 MHz
	2 170-2 200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	2 170-2 200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A	IMT space segment	
2 200 – 2 500 MHz	2 200-2 290 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	2 200-2 290 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	Government fixed MMDS system	
	2 290-2 300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	2 290-2 300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	Government fixed MMDS system	
	2 300-2 450 FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.384A 5.395	2 300-2 450 FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.384A, BHR2,BHR17	Government fixed and mobile MMDS system ISM band 2 400-2 500 MHz 2400-2483.5 MHz: WiFi Amateur radio	2300 – 2400 MHz IMT candidate band

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	2 450-2 483.5 FIXED MOBILE Radiolocation 5.150 5.397	2 450-2 483.5 FIXED MOBILE Radiolocation 5.150, BHR2	Government fixed and mobile ISM band 2 400-2 500 MHz 2400-2483.5 MHz: WiFi	
	2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation 5.150 5.371 5.397 5.398 5.399 5.400 5.402	2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation 5.150 5.371 5.398 5.399 5.400 5.402	Government mobile ISM band 2 400-2 500 MHz	
2 500-2 690 MHz	2 500-2 520 FIXED 5.410 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403 5.405 5.412	2 500-2 520 FIXED 5.410 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403, BHR17	Government Mobile Low power mobile cameras	
	2 520-2 655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 5.339 5.405 5.412 5.417C 5.417D 5.418B 5.418C	2 520-2 655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 5.339 5.417C 5.417D 5.418B 5.418C, BHR17	Government fixed and mobile Low power mobile cameras	
	2 655-2 670 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2 655-2 670 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149, BHR17	Government mobile Low power mobile cameras	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	2 670-2 690 FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2 670-2 690 FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149, BHR17	Government mobile Low power mobile cameras	
2 700-3 600 MHz	2 690-2 700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	2 690-2 700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) FIXED MOBILE except aeronautical mobile 5.340 5.422	Low power mobile cameras Passive band No new fixed and mobile applications	Applicable 1 January 1985
	2 700-2 900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	2 700-2 900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	Government and civil aeronautical radionavigation Low power mobile cameras	
	2 900-3 100 RADIONAVIGATION 5.426 RADIOLOCATION 5.424A 5.425 5.427	2 900-3 100 RADIONAVIGATION 5.426 RADIOLOCATION 5.424A 5.425 5.427	Government and civil radionavigation and radiolocation Maritime > 2900 MHz	
	3 100-3 300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	3 100-3 300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149		
	3 300-3 400 RADIOLOCATION 5.149 5.429 5.430	3 300-3 400 FIXED MOBILE RADIOLOCATION 5.149 5.429		
	3 400-3 600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation 5.431	3 400-3 600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation	Public FWA operators OP1 3410-3455 MHz / 3500-3545 MHz OP2 3455-3500 MHz / 3545-3590 MHz IMT	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
3 600-5 570 MHz	3 600-4 200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3 600-4 200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile BHR16	3.6-3.7 GHz Government fixed and mobile	
	4 200-4 400 AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440	4 200-4 400 AERONAUTICAL RADIONAVIGATION 5.438 5.44	Radio Altimeters	
	4 400-4 500 FIXED MOBILE	4 400-4 500 FIXED MOBILE	Government fixed	
	4 500-4 800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE	4 500-4 800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE	Government fixed	
	4 800-4 990 FIXED MOBILE 5.442 Radio astronomy 5.149 5.339 5.443	4 800-4 990 FIXED MOBILE 5.442 Radio astronomy 5.149 5.339	Government fixed	
	4 990-5 000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	4 990-5 000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	Government fixed	
	5 000-5 010 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367	5 000-5 010 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367	Galileo Satellite navigation	
5 010-5 255 MHz	5 010-5 030 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.328B 5.443B 5.367	5 010-5 030 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.328B 5.443B 5.367	Satellite navigation Galileo C1	
	5030-5091 AERONAUTICAL RADIONAVIGATION 5.367 5.444	5030-5091 AERONAUTICAL RADIONAVIGATION 5.367 5.444	MLS	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	5 091-5 150 AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE [5.4B03] 5.367 5.444 5.444A	5 091-5 150 AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE [5.4B03] 5.367 5.444 5.444A BHR2	MLS	
	5 150-5 250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth- to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C 5.447 5.447B 5.447C	5 150-5 250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE 5.446A 5.446B 5.446 5.446C 5.447B 5.447C, BHR2	RLANS 5150 – 5350 MHz & 5470 – 5725 MHz	
	5 250-5 255 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	5 250-5 255 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	Active satellite sensing Shipborne and VTS radar Weather radar RLANS 5150 – 5350 MHz & 5470 – 5725 MHz	
5 255 - 7 250 MHz	5 255- 5 350 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	5 255- 5 350 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.448A, BHR2	Active satellite sensing Shipborne and VTS radar Weather radar RLANS 5150 – 5350 MHz & 5470 – 5725 MHz	
	5 350-5 460 EARTH EXPLORATION- SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	5 350-5 460 EARTH EXPLORATION- SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D, BHR2	Active satellite sensing Shipborne and VTS radar Weather radar	
	5 460-5 470 RADIONAVIGATION 5.449 EARTH EXPLORATION- SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	5 460-5 470 RADIONAVIGATION 5.449 EARTH EXPLORATION- SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	Active satellite sensing Shipborne and VTS radar Weather radar	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	5 470-5 570 MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION- SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	5 470-5 570 MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION- SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450	RLANS 5150 – 5350 MHz & 5470 – 5725 MHz Active satellite sensing Shipborne and VTS radar Weather radar	
5 570 – 5 850 MHz	5 570-5 650 MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	5 570-5 650 MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	RLANS 5150 – 5350 MHz & 5470 – 5725 MHz Shipborne and VTS radar Weather radar	
	5 650-5 725 RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455	5 650-5 725 RADIOLOCATION MOBILE 5.446A 5.450A FIXED Amateur Space research (deep space) 5.282 5.451 5.453	Shipborne and VTS radar Weather radar RLANS 5150 – 5350 MHz & 5470 – 5725 MHz Government fixed Amateur Radio	
	5 725-5 830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455 5.456	5 725-5 830 FIXED-SATELLITE (Earth-to-space) FIXED MOBILE RADIOLOCATION Amateur 5.150 5.451 5.453, BHR2	ISM band 5 725-5 875 MHz BFWA SRDs Weather radars Amateur radio	
	5 830-5 850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to- Earth) 5.150 5.451 5.453 5.455 5.456	5 830-5 850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION FIXED MOBILE Amateur Amateur-satellite (space- to-Earth) 5.150 5.451 5.453, BHR2	ISM band 5 725-5 875 MHz Weather radars BFWA SRDs Amateur radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
5 850-7 300 MHz	5 850-5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	5 850-5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	BFWA < 5875 MHz ISM band 5 725-5 875 MHz SRDs < 5875 MHz	
	5 925-6 700 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE [5.4B02] 5.149 5.440 5.458	5 925-6 700 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.149 5.440 5.458	Public fixed and fixed-satellite	
	6 700-7 075 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	6 700-7 075 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	Public and government fixed and mobile	
	7 075-7 145 FIXED MOBILE 5.458 5.459	7 075-7 145 FIXED MOBILE 5.458, BHR16		
	7 145-7 235 FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459 5.460	7 145-7 235 FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.460, BHR16	Government and public/private use fixed and mobile	
	7 235-7 250 FIXED MOBILE 5.458	7 235-7 250 FIXED MOBILE 5.458, BHR16	Government fixed and mobile	
	7 250-7 300 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	7 250-7 300 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461, BHR16	Government fixed and fixed-satellite	
7 300 - 8 025 MHz	7 300-7 450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	7 300-7 450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461, BHR16	Government, public/private fixed, fixed-satellite and mobile	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	7 450-7 550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461A	7 450-7 550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461A, BHR16	Government, public/private fixed, fixed-satellite and mobile	
	7 550-7 750 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	7 550-7 750 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BHR16	Government, public/private fixed, fixed-satellite and mobile	
	7 750-7 850 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	7 750-7 850 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile BHR16	Government fixed and meteorological-satellite	
	7 850-7 900 FIXED MOBILE except aeronautical mobile	7 850-7 900 FIXED MOBILE except aeronautical mobile BHR16	Government mobile	
	7 900-8 025 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	7 900-8 025 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461 BHR16	Government mobile and fixed-satellite	
8 025 - 8 550 MHz	8 025-8 175 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8 025-8 175 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A, BHR16	Government fixed, earth exploration-satellite and fixed-satellite	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	8 175-8 215 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8 175-8 215 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A, BHR16	Government fixed, earth exploration-satellite and fixed-satellite	
	8 215-8 400 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8 215-8 400 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A, BHR16	Government fixed, earth exploration-satellite and fixed-satellite	
	8 400-8 500 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466 5.467	8 400-8 500 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 BHR16	Government fixed	
	8 500-8 550 RADIOLOCATION 5.468 5.469	8 500-8 550 RADIOLOCATION FIXED MOBILE 5.468, BHR16		
8 550 – 9 300 MHz	8 550-8 650 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	8 550-8 650 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) FIXED MOBILE 5.468 5.469A, BHR16		
	8 650-8 750 RADIOLOCATION 5.468 5.469	8 650-8 750 RADIOLOCATION FIXED MOBILE 5.468, BHR16		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	8 750-8 850 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471 8 850-9 000 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	8 750-8 850 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 MARITIME RADIONAVIGATION 5.471, BHR16 8 850-9 000 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473, BHR16	Shore based radars 8 825-8 850 MHz	
	9 000-9 200 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.471 5.475A	9 000-9 200 AERONAUTICAL RADIONAVIGATION 5.337 MARITIME RADIONAVIGATION 5.471 Radiolocation 5.475A, BHR16	Private aeronautical radionavigation Shore based radars	
	9 200-9 300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	9 200-9 300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474, BHR16	Shipborne radar	
9.3 – 10.5 GHz	9 300-9 500 RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) EARTH EXPLORATION- SATELLITE (active) 5.427 5.474 5.475 5.475A 5.475B 5.476A	9 300-9 500 RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) EARTH EXPLORATION- SATELLITE (active) 5.427 5.474 5.475 5.475A 5.475B 5.476A BHR16	Shipborne radar	
	9 500-9 800 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	9 500-9 800 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A, BHR16	Private space research	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	9 800-9 900 RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	9 800-9 900 RADIOLOCATION FIXED Earth exploration-satellite (active) Space research (active) 5.477 5.478A 5.478B BHR16		
	9 900-10 000 RADIOLOCATION Fixed 5.477 5.478 5.479	9 900-10 000 RADIOLOCATION Fixed 5.477 5.479, BHR16		
	10-10.45 FIXED MOBILE RADIOLOCATION Amateur 5.479	10-10.45 FIXED MOBILE RADIOLOCATION Amateur 5.479, BHR16	Government and private fixed 10.21 - 10.25 GHz: FWA / WLL Amateur radio	Paired with 10.56 – 10.60 GHz
	10.45-10.5 RADIOLOCATION Amateur Amateur-satellite 5.481	10.45-10.5 RADIOLOCATION FIXED Amateur Amateur-satellite BHR16,BHR18	Government fixed Amateur radio	
10.5 – 11.7 GHz	10.5-10.55 FIXED MOBILE Radiolocation	10.5-10.55 FIXED MOBILE Radiolocation BHR16	Government fixed	
	10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation	10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation BHR16	Government and private fixed 10.56 - 10.60: FWA / WLL	
	10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A, BHR16	Government fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	The provisions of 5.483 now implemented PASSIVE BAND	
	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except aeronautical mobile BHR16	Government and public fixed and fixed-satellite	
11.7 - 14.0 GHz	11.7 – 12.5	11.7 – 12.5	Government fixed	
	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	and mobile Reserved for digital MMDS	
	12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.494 5.495	12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.494 ,	VSAT downlink band.	
	12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth) , 23	Government and public fixed	
	13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	<p>13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A</p> <p>Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B</p>	<p>13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A FIXED MOBILE</p> <p>Standard frequency and time signal-satellite (Earth-to-space) (Earth-to-space) 5.500 5.501B, BHR16</p>		
13.75 – 14.3 GHz	<p>13.75-14 FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION</p> <p>Standard frequency and time signal-satellite (Earth-to-space) Space research Earth exploration-satellite 5.499 5.500 5.501 5.502 5.503</p>	<p>13.75-14 FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION FIXED MOBILE</p> <p>Standard frequency and time signal-satellite (Earth-to-space) Space research Earth exploration-satellite 5.500 5.502, BHR16</p>	Government and public fixed-satellite	
	<p>14-14.25 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B</p> <p>RADIONAVIGATION 5.504</p> <p>Mobile-satellite (Earth-to-space) 5.504C 5.506A Space research 5.504A 5.505</p>	<p>14-14.25 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 FIXED</p> <p>Mobile-satellite (Earth-to-space) 5.504C 5.506A Space research 5.504A 5.505, BHR16,</p>	Government and civil fixed-satellite VSAT uplink band.	
	<p>14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B</p> <p>RADIONAVIGATION 5.504</p> <p>Mobile-satellite (Earth-to-space) 5.506A 5.508A Space research 5.504A 5.505 5.508</p>	<p>14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 FIXED</p> <p>Mobile-satellite (Earth-to-space) 5.506A 5.508A Space research 5.504A 5.505, BHR16</p>	Government and public fixed-satellite BFWA > 14.283 GHz	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
14.3 – 14.8 GHz	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A, BHR16	Government and public fixed-satellite BFWA < 14.317 GHz	
	14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Space research (space-to-Earth) 5.504A	14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Space research (space-to-Earth) 5.504A, BHR16		
	14.47-14.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	14.47-14.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A, BHR16	Public fixed-satellite	
	14.5-14.8 FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research	14.5-14.8 FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research BHR16	Government and public fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
14.8 -18.4 GHz	14.8-15.35 FIXED MOBILE Space research 5.339	14.8-15.35 FIXED MOBILE Space research 5.339, BHR16	Government and public fixed	
	15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511		
	15.4-15.43 AERONAUTICAL RADIONAVIGATION 5.511D	15.4-15.43 AERONAUTICAL RADIONAVIGATION 5.511D		
	15.43-15.63 FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	15.43-15.63 FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C		
	15.63-15.7 AERONAUTICAL RADIONAVIGATION 5.511D	15.63-15.7 AERONAUTICAL RADIONAVIGATION 5.511D		
	15.7-16.6 RADIOLOCATION 5.512 5.513	15.7-16.6 RADIOLOCATION FIXED MOBILE 5.512		
	16.6-17.1 RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	16.6-17.1 RADIOLOCATION FIXED MOBILE Space research (deep space) (Earth-to-space) 5.512		
	17.1-17.2 RADIOLOCATION 5.512 5.513	17.1-17.2 RADIOLOCATION FIXED MOBILE 5.512		
17.2 – 18.6 GHz	17.2-17.3 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	17.2-17.3 EARTH EXPLORATION-SATELLITE (active) FIXED MOBILE RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513A		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation Fixed Mobile 5.514		
	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE BHR16	Government and public fixed	
	18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521	18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521, BHR16	Public fixed	
	18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE	18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE BHR16	Public fixed	
18.6 – 20.2 GHz	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical Mobile Space research (passive) 5.522A 5.522C	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C, BHR16	Government fixed	
	18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE	18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE BHR16	Government and public fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE BHR16	Public fixed	
	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516 Mobile-satellite (space-to-Earth) 5.524	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516 Mobile-satellite (space-to-Earth) FIXED MOBILE 5.524 ,	Private fixed-satellite VSAT downlink	See 29.5 – 30.0 GHz
	20.1-20.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	20.1-20.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) FIXED MOBILE 5.524 5.525 5.526 5.527 5.528 ,	Private fixed-satellite VSAT downlink	See 29.5 – 30.0 GHz
20.2 – 22.55 GHz	20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524	20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) FIXED MOBILE Standard frequency and time signal-satellite (space-to-Earth) 5.524	Government satellite services	See 30 – 31 GHz
	21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Civil and government fixed	ITU-R F.637
	21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.530	21.4-22 FIXED MOBILE	Civil and government fixed	ITU-R F.637

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	22-22.21 FIXED MOBILE except aeronautical mobile 5.149	22-22.21 FIXED MOBILE except aeronautical mobile 5.149	Civil and government fixed	ITU-R F.637
	22.21-22.5 EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	22.21-22.5 EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	Civil and government fixed	ITU-R F.637
	22.5-22.55 FIXED MOBILE	22.5-22.55 FIXED MOBILE	Civil and government fixed	ITU-R F.637
22.55 – 24.75 GHz	22.55-23.55 FIXED INTER-SATELLITE 5.338A MOBILE 5.149	22.55-23.55 FIXED INTER-SATELLITE 5.338A MOBILE 5.149	Civil and government fixed	ITU-R F.637
	23.55-23.6 FIXED MOBILE	23.55-23.6 FIXED MOBILE	Civil and government fixed	ITU-R F.637
	23.6-24 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	23.6-24 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340, BHR2	PASSIVE BAND	
	24-24.05 AMATEUR AMATEUR-SATELLITE 5.150	24-24.05 AMATEUR AMATEUR-SATELLITE 5.150, BHR2	Amateur Radio 24-24.25 GHz ISM band	
	24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150	24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150, BHR2	24-24.25 GHz ISM band Amateur Radio	
	24.25-24.45 FIXED	24.25-24.45 FIXED BHR2	Government fixed	
	24.45-24.65 FIXED INTER-SATELLITE	24.45-24.65 FIXED INTER-SATELLITE BHR2,BHR16	Government and civil fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	24.65-24.75 FIXED INTER-SATELLITE	24.65-24.75 FIXED INTER-SATELLITE BHR2,BHR16	Public fixed	
24.75-29.9 GHz	24.75-25.25 FIXED	24.75-25.25 FIXED BHR2,BHR16	Public fixed 24.77- 24.87GHz: Future FWA allocation	Paired with 25.85- 25.95
	25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space) BHR16	Public fixed	
	25.5-27 EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH 5.536A 5.536C Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH 5.536A 5.536C Standard frequency and time signal-satellite (Earth-to-space) BHR16	Government, private and public fixed 25.85 - 25.95 GHz: Future FWA allocation	Paired with 24.77- 24.87
	27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE	27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE BHR16	Government fixed	
	27.5-28.5 FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540	27.5-28.5 FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540 BHR19	Public fixed 27.55-27.65 GHz: Future FWA allocation	Paired with 28.63-28.73

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
28.5 – 30.0 GHz	28.5-29.1 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	28.5-29.1 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540, BHR19	Public fixed 28.63-28.73 GHz: Future FWA allocation	Paired with 27.55-27.65
	29.1-29.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	29.1-29.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540, BHR19	Public fixed	
	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) Fixed Mobile 5.540 5.542 ,	Private fixed-satellite VSAT uplink	
	29.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 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	29.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 Fixed Mobile 5.525 5.526 5.527 5.538 5.540 5.542 ,	Private fixed-satellite VSAT uplink	
30.0 – 32.0 GHz	30-31 FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	30-31 FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) Fixed Mobile 5.542	Government satellite services	See 20.2 – 21.2 GHz

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	31-31.3 FIXED 5.338A 5.543A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	31-31.3 FIXED 5.338A 5.543A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	Private fixed	
	31.3-31.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	31.3-31.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	PASSIVE BAND	
	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) FIXED BHR18 Mobile except aeronautical mobile 5.149 5.546	Private fixed	
	31.8-32 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	31.8-32 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Civil high density fixed	
32.0 – 35.5 GHz	32-32.3 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547D 5.548	32-32.3 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Civil high density fixed	
	32.3-33 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	32.3-33 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	Civil high density fixed	
	33-33.4 FIXED 5.547A RADIONAVIGATION 5.547 5.547E	33-33.4 FIXED 5.547A RADIONAVIGATION 5.547	Civil high density fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	33.4-34.2 RADIOLOCATION 5.549	33.4-34.2 RADIOLOCATION FIXED MOBILE 5.549		
	34.2-34.7 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	34.2-34.7 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) FIXED MOBILE 5.549		
	34.7-35.2 RADIOLOCATION Space research 5.550 5.549	34.7-35.2 RADIOLOCATION Space research 5.550 FIXED MOBILE 5.549		
	35.2-35.5 METEOROLOGICAL AIDS RADIOLOCATION 5.549	35.2-35.5 METEOROLOGICAL AIDS RADIOLOCATION FIXED MOBILE 5.549		
35.5 – 39.5 GHz	35.5-36 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	35.5-36 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) FIXED MOBILE 5.549 5.549A		
	36-37 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	36-37 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A		
	37-37.5 FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547	37-37.5 FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547	Public fixed	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	Public fixed	
	38-39.5 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	38-39.5 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	Public fixed	
39.5 - 42.5 GHz	39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547		
	40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	Future broadband mobile systems	
	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.547	40.5 - 43.5: reserved for future FWA	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	41-42.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551F 5.551G	41-42.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B Mobile 5.547	40.5 - 43.5: reserved for future FWA	
42.5 – 48.2 GHz	42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547	42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547	40.5 - 43.5: reserved for future FWA Future broadband mobile systems	
	43.5-47 MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	43.5-47 MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	Government fixed	
	47-47.2 AMATEUR AMATEUR-SATELLITE	47-47.2 AMATEUR AMATEUR-SATELLITE	Amateur radio	
	47.2-47.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A	47.2-47.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		
	47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE	47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE		
	47.9-48.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A	47.9-48.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		
	48.2-48.54 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	48.2-48.54 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
48.54 - 55.78 GHz	48.54-49.44 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555	48.54-49.44 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555		
	49.44-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 [5.BA03] (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	49.44-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 [5.BA03] (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		
	50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		
	50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-satellite (Earth-to-space)	50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-satellite (Earth-to-space)		
	51.4-52.6 FIXED 5.338A MOBILE 5.547 5.556	51.4-52.6 FIXED 5.338A MOBILE 5.547 5.556		
	52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	PASSIVE BAND	
	54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)	PASSIVE BAND	
55.78- 59.3 GHz	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	55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	56.9-57 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	56.9-57 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547		
	57-58.2 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	57-58.2 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547		
	58.2-59 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	58.2-59 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556		
	59-59.3 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	59-59.3 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)		
59.3 – 74 GHz	59.3-64 FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	59.3-64 FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	BWA ISM 61 – 61.5 GHz	
	64-65 FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	64-65 FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	65-66 EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	65-66 EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	BWA	Paired with 62-63 GHz
	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
	71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Government fixed	Paired with 81 – 84 GHz
74 – 81 GHz	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561		
	76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149, BHR2	Amateur Radio	
	77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149	77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149	Amateur Radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	Amateur Radio	
	79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	Amateur radio	
81-92 GHz	81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	Government fixed	Paired with 71 – 74 GHz
	84-86 FIXED FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	84-86 FIXED FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 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 5.561A	81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A		
	84-86 FIXED FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	84-86 FIXED FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	PASSIVE BAND	
92 – 105 GHz	92-94 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	92-94 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149, BHR20		
	94-94.1 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	94-94.1 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A, BHR20		
	94.1-95 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	94.1-95 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149, BHR20		
	95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554, BHR20		
	100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	PASSIVE BAND	
	102-105 FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	102-105 FIXED MOBILE RADIO ASTRONOMY 5.149 5.341, BHR20		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
105 - 122.25 GHz	105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341, BHR20		
	109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	PASSIVE BAND	
	111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341, BHR20		
	114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341, BHR20	PASSIVE BAND	
	116-119.98 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	116-119.98 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341, BHR20		
	119.98-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	119.98-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341, BHR20		
122.25 – 148.5 GHz	122.25-123 FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	122.25-123 FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	Amateur Radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	123-130 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	123-130 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554, BHR20		
	130-134 EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	130-134 EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A, BHR20		
	134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy	134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy	Amateur Radio	
	136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	Amateur radio	
	141-148.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	141-148.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149, BHR20		
148.5-174.5 GHz	148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	PASSIVE BAND	
	151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149, BHR20		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562G	155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562G, BHR20		
	158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) BHR20		
	164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.34	164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.34	PASSIVE BAND	
	167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149, BHR20		
174.5 – 200 GHz	174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558	174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558 BHR20		
	174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive) BHR20		
	182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563	182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	PASSIVE BAND	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive) BHR20		
	190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.34	190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.34	PASSIVE BAND	
	191.8-200 FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	191.8-200 FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554 BHR20		
200 - 232 GHz	200-202 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	200-202 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	PASSIVE BAND	
	202-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	202-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	PASSIVE BAND	
	209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341, BHR20		
	217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341, BHR20		

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	PASSIVE BAND	
	231.5-232 FIXED MOBILE Radiolocation	231.5-232 FIXED MOBILE Radiolocation BHR20		
232 – 252 GHz	232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation BHR20		
	235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B, BHR20		
	238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE BHR20		
	240-241 FIXED MOBILE RADIOLOCATION	240-241 FIXED MOBILE RADIOLOCATION BHR20		
	241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	Amateur Radio	
	248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	Amateur Radio	

Frequency Allocation	ITU RR allocations for Region 1	National Allocations for Kingdom of Bahrain	Major utilization in Kingdom of Bahrain	Additional Information
	250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	PASSIVE BAND	
252 – 1000 GHz	252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554, BHR20		
	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A, BHR20		
	275-1 000 (Not allocated) 5.565	275-1 000 (Not allocated) 5.565, BHR20		

Annex 1 Glossary of Acronyms, Terms and Definitions

AGA	Air-Ground-Air
AIS	Universal Shipborne Automatic Identification System
Appendix 17	Appendix 17 of the Radio Regulations: Frequencies and channeling arrangements in the high-frequency bands for the maritime mobile service.
Appendix 18	Appendix 18 of the Radio Regulations: Table of transmitting frequencies in the VHF maritime mobile band
Appendix 25	Appendix 25 of the Radio Regulations: Provisions and associated frequency allotment plan for coast radiotelephone stations operating in the exclusive maritime mobile bands between 4 000 kHz and 27 500 kHz
Appendix 26	Appendix 26 of the Radio Regulations: Provisions and associated frequency allotment plan for the Aeronautical Mobile (OR) service in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz
Appendix 27	Appendix 27 of the Radio Regulations: Frequency allotment plan for the Aeronautical Mobile (R) service and related information
Appendix 30	Appendix 30B of the Radio Regulations: Provisions for all services and associated plans and list for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2)
Appendix 30A	Appendix 30A of the Radio Regulations: Provisions and associated plans and list for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2
Appendix 30B	Appendix 30B of the Radio Regulations: Provisions and associated plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz
Article 12	Article 12 of the Radio Regulations: Seasonal planning of the high frequency bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz
Article 52	Article 52 of the Radio Regulations: Special rules relating to the use of frequencies
ASMG	Arab Spectrum Management Group
BHR	Bahrain national footnote
ATC	Air Traffic Control
BFWA	Broadband Fixed Wireless Access
BWA	Broadband Wireless Access
CB	Citizens' Band
CDMA	Code Division Multiple Access
DAB	Digital Audio Broadcasting

DECT	Digital Cordless Telecommunications
DME	Distance Measuring Equipment
DMO	Direct Mode Operation
DSC	Digital Selective Calling
EGSM	Extended GSM band (at 900 MHz)
e.i.r.p.	Equivalent isotropically radiated power - the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain)
e.r.p.	Equivalent radiated power - (in a given direction) the product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction
EMC	Electromagnetic Compatibility
ENG	Electronic News Gathering
EPIRB	Emergency Position-Indicating Radio Beacon
ETSI	European Telecommunications Standards Institute
FDD	Frequency Division Duplex
FM	Frequency Modulation
FWA	Fixed Wireless Access
GCC	Gulf Cooperation Council
GHz	Gigahertz (1 000 000 000 Hz)
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
GSM900	Global System for Mobile Communications (at 900 MHz – also at 1800MHz)
HAPS	High-Altitude Platform System
HF	High Frequency (Short Wave)
Hz	Hertz, the unit of frequency measurement
ICAO	International Civil Aviation Organization
IF	Intermediate Frequency
ILS	Instrument Landing System
IMO	International Maritime Organization
IMT-2000	International Mobile Telecommunications - 3rd generation mobile systems
ISM	Industrial, Scientific and Medical applications
ITU	International Telecommunication Union

ITU Geneva 1975 plan	Plan for the assignment of frequencies to broadcasting stations in the medium frequency bands in Regions 1 and 3 and in the low frequency bands in Region 1
ITU Geneva 1984 plan	Frequency assignment plan for FM sound broadcasting stations in Region 1 and part of Region 3 in the band 87.5-108 MHz
ITU Geneva 1985 plan	Regional agreements concerning: -the planning of the maritime radionavigation service (Radiobeacons) in the European maritime area, and -the medium frequency maritime mobile and aeronautical radionavigation services (Region 1)
ITU Geneva 2006 plan (GE06)	http://www.itu.int/ITU-R/terrestrial/broadcast/plans/ge06/index.html The Plans for VHF/UHF analogue and digital broadcasting in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz, Geneva 2006
ITU RR	ITU Radio Regulation
ITU Stockholm 1961 plan	Plans annexed to the Regional agreement for the European Broadcasting Area concerning the use of frequencies by the broadcasting services in the VHF and UHF bands
ITU-R	The Radiocommunication Sector of the ITU
kHz	kilohertz (1 000 Hz)
LEO	Low Earth Orbit
MHz	Megahertz (1 000 000 Hz)
MIDS	Multifunctional Information Distribution System
MLS	Microwave Landing System
MMDS	Microwave Multipoint Distribution System
MVDS	Microwave (or Multipoint) Video Distribution System
MWS	Multimedia Wireless system
NAVTEX	Navigation Text Messaging system
NDB	Non Directional Beacon
NFP	National Frequency Plan
PAMR	Public Access Mobile Radio
PMR	Private (or Professional) Mobile Radio
PPDR	Public Protection and Disaster Relief
RACON	Radar Beacon
RF	Radio Frequency
RFID	Radio Frequency Identification Devices
R-LAN	Radio Local Area Network

RTTT	Road Transport and Traffic Telematics
SAB	Services Ancillary to Broadcasting
SAP	Services Ancillary to Programming
SART	Search and Rescue Transponder
S-DAB	Satellite Digital Audio Broadcasting
s-E	Space-to-Earth direction of transmission
SMO	Spectrum Management Organisation
S-PCS	Satellite Personal Communications System
SRD	Short Range Device
SRR	Short Range Radar
s-s	Space-space direction of transmission
SSCC	Spectrum Strategy and Coordination Committee (of Bahrain)
SSR	Secondary Surveillance Radar
TACAN	Tactical Air Navigation System
T-DAB	Terrestrial Digital Audio Broadcasting
TDD	Time Division Duplex
TETRA	Terrestrial Trunked Radio (Digital)
UMTS	Universal Mobile Telecommunications Systems
VOLMET	Flight Meteorological Information (French)
VOR	VHF Omnidirectional Range
VSAT	Very Small Aperture Terminal
VTS	Vessel Traffic Services
WARC	World Administrative Radio Conference
WAS	Wireless Access System
WLL	Wireless Local Loop
WRC	World Radiocommunication Conference

<p>Aeronautical mobile (OR) service An aeronautical mobile service intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.</p>
<p>Aeronautical mobile (R) service An aeronautical mobile service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes.</p>
<p>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.</p>
<p>Aeronautical mobile-satellite (OR) service An aeronautical mobile-satellite service intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes.</p>
<p>Aeronautical mobile-satellite (R) service An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.</p>
<p>Aeronautical mobile-satellite service A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.</p>
<p>Aeronautical radionavigation service A radionavigation service intended for the benefit and for the safe operation of aircraft.</p>
<p>Aeronautical radionavigation-satellite service A radionavigation-satellite service in which earth stations are located on board aircraft.</p>
<p>Amateur service A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.</p>
<p>Amateur-satellite service A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.</p>
<p>Broadcasting service A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission.</p>
<p>Broadcasting-satellite service A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public. In the broadcasting-satellite service, the term “direct reception” shall encompass both individual reception and community reception.</p>
<p>Deep space Space at distances from the Earth equal to, or greater than, 2×10^6 km.</p>
<p>Earth exploration-satellite service A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which: – information relating to the ch – 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.</p>

Fixed service A radiocommunication service between specified fixed points.
Fixed-satellite service A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services.
Harmful interference Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations.
Industrial, scientific and medical (ISM) applications (of radio frequency energy) Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications.
Instrument landing system A radionavigation system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.
Instrument landing system glide path A system of vertical guidance embodied in the instrument landing system which indicates the vertical deviation of the aircraft from its optimum path of descent.
Interference The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.
Inter-satellite service A radiocommunication service providing links between artificial satellites.
Land mobile service A mobile service between base stations and land mobile stations, or between land mobile stations.
Land mobile-satellite service A mobile-satellite service in which mobile earth stations are located on land.
Maritime mobile service A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.
Maritime mobile-satellite service A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.
Maritime radionavigation service A radionavigation service intended for the benefit and for the safe operation of ships.
Maritime radionavigation-satellite service A radionavigation-satellite service in which earth stations are located on board ships.
Meteorological aids service A radiocommunication service used for meteorological, including hydrological, observations and exploration.

<p>Meteorological-satellite service An earth exploration-satellite service for meteorological purposes.</p>
<p>Mobile service A radiocommunication service between mobile and land stations, or between mobile stations.</p>
<p>Mobile-satellite service A radiocommunication service – between mobile earth stations and one or more space stations, or between space stations used by this service; or – between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation.</p>
<p>Port operations service A maritime mobile service in or near a port, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages which are of a public correspondence nature shall be excluded from this service.</p>
<p>Public correspondence Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission.</p>
<p>Radar A radiodetermination system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined.</p>
<p>Radar beacon (racon) A transmitter-receiver associated with a fixed navigational mark which, when triggered by a radar, automatically returns a distinctive signal which can appear on the display of the triggering radar, providing range, bearing and identification information.</p>
<p>Radio astronomy Astronomy based on the reception of radio waves of cosmic origin.</p>
<p>Radio astronomy service A service involving the use of radio astronomy.</p>
<p>Radio waves or Hertzian waves Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.</p>
<p>Radiocommunication service A service involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes</p>
<p>Radiodetermination The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.</p>
<p>Radiodetermination service A radiocommunication service for the purpose of radiodetermination.</p>
<p>Radiodetermination-satellite service A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations. This service may also include feeder links necessary for its own operation.</p>
<p>Radiolocation Radiodetermination used for purposes other than those of radionavigation.</p>

<p>Radiolocation service A radiodetermination service for the purpose of radiolocation.</p>
<p>Radiolocation-satellite service A radiodetermination-satellite service used for the purpose of radiolocation. This service may also include the feeder links necessary for its operation.</p>
<p>Radionavigation Radiodetermination used for the purposes of navigation, including obstruction warning.</p>
<p>Radionavigation service A radiodetermination service for the purpose of radionavigation.</p>
<p>Radionavigation-satellite service A radiodetermination-satellite service used for the purpose of radionavigation. This service may also include feeder links necessary for its operation.</p>
<p>Safety service Any radiocommunication service used permanently or temporarily for the safeguarding of human life and property.</p>
<p>Ship movement service A safety service in the maritime mobile service other than a port operations service, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the movement of ships. Messages which are of a public correspondence nature shall be excluded from this service.</p>
<p>Space research service A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.</p>
<p>Space telemetry The use of telemetry for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.</p>
<p>Special service A radiocommunication service, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to public correspondence.</p>
<p>Standard frequency and time signal service A radiocommunication service for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception.</p>
<p>Standard frequency and time signal-satellite service A radiocommunication service using space stations on earth satellites for the same purposes as those of the standard frequency and time signal service. This service may also include feeder links necessary for its operation.</p>
<p>Telecommand The use of telecommunication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.</p>
<p>Telecommunication Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.</p>
<p>Telemetry The use of telecommunication for automatically indicating or recording measurements at a distance from the measuring instrument.</p>

Annex 2 Relevant footnotes from ITU Radio Regulations

(Bahrain, GCC and neighbouring countries)

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

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

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, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-07)

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

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

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

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

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

5.67B The use of the band 135.7-137.8 kHz in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Libyan Arab Jamahiriya, Lebanon, Syrian Arab Republic, Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the above-mentioned countries in the band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-07)

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

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

5.76 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 Organization (IMO) (see Resolution 339 (Rev.WRC-07)). (WRC-07)

5.82 In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-07)

5.82A The use of the band 495-505 kHz is limited to radiotelegraphy. (WRC-07)

5.82B Administrations authorizing the use of frequencies in the band 495-505 kHz by services other than the maritime mobile service shall ensure that no harmful interference is caused to the maritime mobile service in this band or to the services having allocations in the adjacent bands, noting in particular the conditions of use of the frequencies 490 kHz and 518 kHz, as prescribed in Articles 31 and 52. (WRC-07)

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

5.90 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 in Region 1 use radiodetermination systems in the bands 1606.5-1625 kHz, 1635-1800 kHz, 1850-2160 kHz, 2194-2300 kHz, 2502-2850 kHz and 3500-3800 kHz, subject to agreement obtained under No 9.21. The radiated mean power of these stations shall not exceed 50 W.

5.99 Additional allocation: in Saudi Arabia, Austria, Iraq, the Libyan Arab Jamahiriya, Uzbekistan, Slovakia, Romania, Serbia, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

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

5.103 In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1850-2045 kHz, 2194-2498 kHz, 2502-2 625 kHz and 2650-2850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.

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

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

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

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

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

5.113 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 Denmark, Iraq, Malta, and Serbia, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

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

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

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

5.128 Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-07)

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

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

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

5.134 The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article 12. Administrations are encouraged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution 517 (Rev.WRC-07). (WRC-07)

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

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

5.138 The following bands:

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

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorisation 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.

5.138A Until 29 March 2009, the band 6 765-7 000 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. After this date, this band is allocated to the fixed and the mobile except aeronautical mobile (R) services on a primary basis. (WRC-03)

5.141B Additional allocation: after 29 March 2009, in Algeria, Saudi Arabia, Australia, **Bahrain**, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, the Libyan Arab Jamahiriya, Morocco, Mauritania, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, Singapore, Sudan, Tunisia, Viet Nam and Yemen, the band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-03)

5.141C In Regions 1 and 3, the band 7 100-7 200 kHz is allocated to the broadcasting service until 29 March 2009 on a primary basis. (WRC-03)

5.142 Until 29 March 2009, the use of the band 7 100-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. After 29 March 2009 the use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-03)

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

5.143B In Region 1, the band 7 350-7 450 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, on condition that harmful interference is not caused to the broadcasting service, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located, each station using a total radiated power that shall not exceed 24 dBW. (WRC-03)

5.143C Additional allocation: after 29 March 2009 in Algeria, Saudi Arabia, **Bahrain**, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-03)

5.143E Until 29 March 2009, the band 7 450-8 100 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. (WRC 03)

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

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

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

5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz, 25 550-25 670 kHz, 37.5-38.25 MHz, 73-74.6 MHz in Regions 1 and 3, 150.05-153 MHz in Region 1, 322-328.6 MHz, 406.1-410 MHz, 608-614 MHz in Regions 1 and 3, 1 330-1 400 MHz, 1 610.6-1 613.8 MHz, 1 660-1 670 MHz, 1 718.8-1 722.2 MHz, 2 655-2 690 MHz, 3 260-3 267 MHz, 3 332-3 339 MHz, 3 345.8-3 352.5 MHz, 4 825-4 835 MHz, 4 950-4 990 MHz, 4 990-5 000 MHz, 6 650-6 675.2 MHz, 10.6-10.68 GHz, 14.47-14.5 GHz, 22.01-22.21 GHz, 22.21-22.5 GHz, 22.81-22.86 GHz, 23.07-23.12 GHz, 31.2-31.3 GHz, 31.5-31.8 GHz in Regions 1 and 3, 36.43-36.5 GHz, 42.5-43.5 GHz, 42.77-42.87 GHz, 43.07-43.17 GHz, 43.37-43.47 GHz, 48.94-49.04 GHz, 76-86 GHz, 92-94 GHz, 94.1-100 GHz, 102-109.5 GHz, 111.8-114.25 GHz, 128.33-128.59 GHz, 129.23-129.49 GHz, 130-134 GHz, 136-148.5 GHz, 151.5-158.5 GHz, 168.59-168.93 GHz, 171.11-171.45 GHz, 172.31-172.65 GHz, 173.52-173.85 GHz, 195.75-196.15 GHz, 209-226 GHz, 241-250 GHz, 252-275 GHz are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29). (WRC-2000)

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

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

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

5.180 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 74.8 MHz and 75.2 MHz.

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

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

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

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

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

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

5.204 Different category of service: in Afghanistan, Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Serbia, Singapore, Thailand and Yemen, 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**). (WRC-07)

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 the relevant ITU-R Recommendation. (WRC-07)

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

5.211 Additional allocation: in Germany, Saudi Arabia, Austria, **Bahrain**, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-07)

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

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

5.220 The use of the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The mobile-satellite service shall not constrain the development and use of the radionavigation-satellite service in the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz. (WRC-97)

5.221 Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, **Bahrain**, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, the Libyan Arab Jamahiriya, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe. (WRC-07)

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

5.223 Recognising that the use of the band 149.9 - 150.05 MHz by the fixed and mobile services may cause harmful interference to the radionavigation-satellite service, administrations are urged not to authorise 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 radionavigation-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 and the band 156.7625-156.8375 MHz are contained in Article **31** and Appendix **18**. The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles 31 and 52, and in Appendix 18. In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 18). Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service. However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)

5.227 Additional allocation: the bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis. The use of these bands by the fixed and land mobile services shall not cause harmful interference to nor claim protection from the maritime mobile VHF radiocommunication service. (WRC-07)

5.227A Additional allocation: the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz are also allocated to the mobile-satellite service (Earth-to-space) on a secondary basis for the reception of automatic identification system (AIS) emissions from stations operating in the maritime-mobile service (see Appendix 18). (WRC-07)

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

5.254 The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. 5.256A. (WRC-03)

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

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

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

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

5.260 Recognising that the use of the band 399.9 - 400.05 MHz by the fixed and mobile services may cause harmful interference to the radionavigation satellite service, administrations are urged not to authorise 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, Botswana, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Romania, Singapore, Somalia, Tajikistan, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

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

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

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

5.267 Any emission capable of causing harmful interference to the authorised 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/m²) for $0^\circ \leq \delta \leq 5^\circ$, $153 + 0.077 (\leq -5)$ dB(W/m²) for $5^\circ \leq \delta \leq 70^\circ$ and -148 dB(W/m²) for $70^\circ \leq \delta \leq 90^\circ$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. (WRC-97)

5.276 Additional allocation: in Afghanistan, Algeria, Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, Burkina Faso, Burundi, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Switzerland, Tanzania, Thailand, Togo, Turkey and Yemen, the band 430-440 MHz is also allocated to the fixed service on a primary basis and the bands 430-435 MHz and 438-440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-07)

5.279A The use of this band by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU **R SA.1260-1**. Additionally, the Earth exploration-satellite service (active) in the band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-03)

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**.

5.286AA The band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). See Resolution **224** (Rev.WRC-07). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

5.286A The use of the bands 454 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is subject to coordination under **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)

5.287 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.1174-2**. (WRC-07)

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.

5.296 Additional allocation: in Germany, Saudi Arabia, Austria, Belgium, Côte d'Ivoire, Denmark, Egypt, Spain, Finland, France, Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Lithuania, Malta, Morocco, Monaco, Norway, Oman, the Netherlands, Portugal, the Syrian Arab Republic, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470-790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-07)

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.

5.311A For the frequency band 620-790 MHz, see also Resolution **549** (WRC-07).

5.316 Additional allocation: in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Greece, Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Mali, Monaco, Montenegro, Norway, the Netherlands, Portugal, the United Kingdom, the Syrian Arab Republic, Serbia, Sweden and Switzerland, 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. This allocation is effective until 16 June 2015. (WRC-07)

5.316B In Region 1, the allocation to the mobile, except aeronautical mobile, service on a primary basis in the frequency band 790-862 MHz shall come into effect from 17 June 2015 and shall be subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolution **224** (Rev.WRC-07) and Resolution **749** (Rev.WRC-07) shall apply. (WRC-07)

5.317A Those parts of the band 698-960 MHz in Region 2 and the band 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) See Resolution **224** (Rev.WRC-07) and Resolution **749** (WRC-07). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07)

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

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

5.327A The use of the band 960-1 164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **417** (WRC-07). (WRC-07)

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

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

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

5.329 Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. 5.331. Furthermore, the use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. **5.43** shall not apply in respect of the radiolocation service. Resolution **608** (WRC-03) shall apply. (WRC-03)

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

5.330 Additional allocation: in Angola, Saudi Arabia, **Bahrain**, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lebanon, Mozambique, Nepal, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

5.331 Additional allocation: in Algeria, Germany, Saudi Arabia, Australia, Austria, **Bahrain**, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-07)

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

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

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

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

5.338A In the bands 1 350-1 400 MHz, 1 427-1 429 MHz, 1 429-1 452 MHz, 22.55-23.55 GHz, 3031 GHz, 31-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz and 51.4-52.6 GHz, Resolution **750** (WRC-07) applies. (WRC-07)

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

5.340 All emissions are prohibited in the following bands:

1 400 - 1 427 MHz, 2 690 - 2 700 MHz, except those provided for by No. **5.422**, 10.68 - 10.7 GHz, except those provided for by No. **5.483**, 15.35-15.4 GHz, except those provided for by No. **5.511**, 23.6 - 24 GHz, 31.3 - 31.5 GHz,

31.5 - 31.8 GHz, in Region 2, 48.94 - 49.04 GHz, from airborne stations, 50.2 - 50.4 GHz¹, 52.6 - 54.25 GHz, 86 - 92 GHz, 100 - 102 GHz, 109.5 - 111.8 GHz, 114.25 - 116 GHz, 148.5 - 151.5 GHz, 164 - 167 GHz, 182 - 185 GHz, 190 - 191.8 GHz, 200 - 209 GHz, 226 - 231.5 GHz, 250 - 252 GHz. (WRC 03)

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

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).*

¹ 5.340.1 The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2 - 50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (WRC-97)

5.347A In the bands:

137-138MHz, 387-390MHz, 400.15-401MHz, 1 452-1 492MHz, 1 525-1 559MHz, 1559-1610MHz, 1 613.8-1 626.5MHz, 2 655-2 670MHz, 2 670-2 690MHz, 21.4-22 GHz, Resolution **739** (Rev.WRC-07) applies. (WRC-07)

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

5.348A In the band 1 518 - 1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be -150 dB(W/m²) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix 5. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **5.43A** does not apply. (WRC-03)

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

5.349 Different category of service: in Saudi Arabia, Azerbaijan, **Bahrain**, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, 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-07)

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

5.351A For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212** (Rev.WRC-07) and **225** (Rev.WRC-07). (WRC-07)

5.352A In the band 1 525 - 1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in France and French overseas territories in Region 3, Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998. (WRC 97)

5.353A In applying the procedures of **Section II** of Article **9** to the mobile-satellite service in the bands 1 530 - 1 544 MHz and 1 626.5 - 1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222** (WRC-2000) shall apply.) (WRC2000)

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 **9.11A**.

5.355 Additional allocation: in **Bahrain**, Bangladesh, Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Kuwait, Lebanon, Malta, Qatar, Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-03)

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 authorised 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.) (WRC-2000)

5.359 Additional allocation: in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bulgaria, Cameroon, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, the Libyan Arab Jamahiriya, Jordan, Kazakhstan, Kuwait, Lebanon, Lithuania, Mauritania, Moldova, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands. (WRC-07)

5.362B Additional allocation: The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2010 in Algeria, Saudi Arabia, Cameroon, Libyan Arab Jamahiriya, Jordan, Mali, Mauritania, Syrian Arab Republic and Tunisia. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. The band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis in Algeria, Germany, Armenia, Azerbaijan, Belarus, Benin, Bulgaria, Spain, Russian Federation, France, Gabon, Georgia, Guinea, Guinea-Bissau, Kazakhstan, Lithuania, Moldova, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, Dem. People's Rep. of Korea, Romania, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-07)

5.362C Additional allocation: in Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Jordan, Malta, Qatar, the Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-07)

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

5.365 The use of the band 1 613.8 - 1 626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under 9.11A.

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

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

5.368 With respect to the radiodetermination-satellite and mobile-satellite services the provisions of No. **4.10** do not apply in the band 1 610 - 1 626.5 MHz, with the exception of the aeronautical radionavigation-satellite service.

5.371 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 radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. **9.21**.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6 - 1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. **29.13** 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 the stations in the fixed service operating in the countries listed in No. **5.359**. (WRC97)

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 authorised when such transmissions are used to extend or supplement the aircraft-to-satellite links.

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

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

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

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

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

5.379E In the band 1 668.4 - 1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4 - 1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)

5.380 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 aircraft is limited to transmissions from aeronautical stations and the use of the band 1 800 -1 805 MHz is limited to transmissions from aircraft stations.

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

5.382 Different category of service: in Saudi Arabia, Armenia, Azerbaijan, **Bahrain**, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Serbia, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine and Yemen, the allocation of the band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-07)

5.384A The bands, or portions of the bands, 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223** (Rev.WRC-07). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07)

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

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

5.388A In Regions 1 and 3, the bands 1 885 -1 980 MHz, 2 010 -2 025 MHz and 2 110 - 2 170 MHz and, in Region 2, the bands 1 885 - 1 980 MHz and 2 110 - 2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications 2000 (IMT-2000), in accordance with Resolution **221** (Rev.WRC-03). Their use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-03)

5.388B In Algeria, Saudi Arabia, **Bahrain**, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT-2000 base station in neighbouring countries, in the bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of -127 dB(W/(m² . MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-03)

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

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

5.391 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-geostationary satellites, in the space research, space operations and Earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 -2 290 MHz, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions of those services and in those bands between geostationary and non-geostationary satellites.

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

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

5.400 Different category of service: in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Lebanon, Liberia, Madagascar, Mali, Pakistan, Papua New Guinea, the Dem. Rep. of the Congo, the Syrian Arab Republic, Sudan, Swaziland, Togo and Zambia, the allocation of the band 2 483.5-2 500 MHz to the radiodetermination-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21** from countries not listed in this provision. (WRC-03)

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

5.403 Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply. (WRC-07)

5.410 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-07)

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

5.414 The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**. (WRC-07)

5.416 The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. The provisions of No. **9.19** shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)

5.417A In applying provision No. **5.418**, in Korea (Rep. of) and Japan, resolves **3** of Resolution **528** (Rev.WRC-03) is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial broadcasting service to additionally operate on a primary basis in the band 2 605-2 630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416**. The provisions of No.

5.416 and Table **21-4** of Article **21** do not apply. Use of non-geostationary satellite systems in the broadcasting-satellite service (sound) in the band 2 605-2 630 MHz is subject to the provisions of Resolution **539** (Rev.WRC-03). The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 605-2 630 MHz for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

-130 dB(W/(m² · MHz)) for $00 \leq \theta \leq 50$
-130 + 0.4 ($\theta - 5$) dB(W/(m² · MHz)) for $50 < \theta \leq 250$
-122 dB(W/(m² · MHz)) for $250 < \theta \leq 900$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. In the case of the broadcasting-satellite service (sound) networks of Korea (Rep. of), as an exception to the limits above, the power flux-density value of -122 dB(W/(m² · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 000 km around the territory of the administration notifying the broadcasting-satellite service (sound) system, for angles of arrival greater than 350. (WRC-03)

5.417C Use of the band 2 605 -2 630 MHz by non geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A** is, for which complete Appendix 4 coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12**. (WRC-03)

5.417D Use of the band 2 605-2 630 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 4 July 2003 is subject to the application of the provisions of No. **9.13** with respect to non geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, and No. **22.2** does not apply. (WRC-03)

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

5.418C Use of the band 2 630 2 655 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **9.13** with respect to non geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418** and No. **22.2** does not apply. (WRC-03)

5.419 When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. **9.11A**. (WRC-07)

5.420 The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**. The coordination under No. **9.11A** applies. (WRC-07)

5.422 Additional allocation: in Saudi Arabia, Armenia, Azerbaijan, **Bahrain**, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, Moldova, Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-07)

5.423 In the band 2 700 - 2 900 MHz, ground-based radars used for meteorological purposes are authorised to operate on a basis of equality with stations of the aeronautical radionavigation service.

5.424A In the band 2 900 - 3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)

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

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

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

5.429 Additional allocation: in Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. People's Rep. 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-07)

5.430A Different category of service: in Albania, Algeria, Germany, Andorra, Saudi Arabia, Austria, Azerbaijan, **Bahrain**, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cameroon, Cyprus, Vatican, Côte d'Ivoire, Croatia, Denmark, French Overseas Departments and Communities in Region 1, Egypt, Spain, Estonia, Finland, France, Gabon, Georgia, Greece, Guinea, Hungary, Ireland, Iceland, Israel, Italy, Jordan, Kuwait, Lesotho, Latvia, Macedonia, Liechtenstein, Lithuania, Malawi, Malta, Morocco, Mauritania, Moldova, Monaco, Mongolia, Montenegro, Mozambique, Namibia, Niger, Norway, Oman, Netherlands, Poland, Portugal, Qatar, Syria, Congo, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Senegal, Serbia, Sierra Leone, Slovenia, South Africa, Sweden, Switzerland, Swaziland, Togo, Chad, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the band 3 400-3 600 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed $-154.5 \text{ dBW}/(\text{m}^2 \cdot 4 \text{ kHz})$ for more than 20 per cent of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). This allocation is effective from 17 November 2010. (WRC-07)

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

5.440 The standard frequency and time signal-satellite service may be authorised 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 4 500 - 4 800 MHz (space-to-Earth), 6 725 - 7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7 - 10.95 GHz (space-to Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite system in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite system in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.442 In the bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution **416** (WRC-07) and shall not cause harmful interference to the fixed service. (WRC-07)

5.443B In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5 030 - 5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010 - 5 030 MHz shall not exceed $-124.5 \text{ dB(W/m}^2)$ in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990 - 5 000 MHz, radionavigation-satellite service systems operating in the band 5 010 - 5 030 MHz shall comply with the limits in the band 4 990 - 5 000 MHz defined in Resolution **741** (WRC 03). (WRC-03)

5.444 The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the band 5 030-5 091 MHz, the requirements of this system shall take precedence over other uses of this band. For the use of the band 5 091-5 150 MHz, No. **5.444A** and Resolution **114** (Rev.WRC-03) apply. (WRC-07)

5.444A Additional allocation: the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution 114 (Rev.WRC-03);
- prior to 1 January 2018, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 0005 091 MHz band, shall take precedence over other uses of this band;
- after 1 January 2016, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-03)

5.444B The use of the band 5 091-5 150 MHz by the aeronautical mobile service is limited to:

- systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution **748** (WRC-07);
- aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution **418** (WRC-07);
- aeronautical security transmissions. Such use shall be in accordance with Resolution **419** (WRC-07). (WRC-07)

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 radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. **5.369** and **5.400**, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the bands 1 610 - 1 626.5 MHz and/or 2 483.5 -2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution 229 (WRC-03). (WRC-07)

5.446B In the band 5 150 - 5 250 MHz, stations in the mobile service shall not claim protection from earth stations in the fixed-satellite service. No. **5.43A** does not apply to the mobile service with respect to fixed-satellite service earth stations. (WRC-03)

5.446C Additional allocation: in Region 1 (except in Algeria, Saudi Arabia, **Bahrain**, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan and Tunisia) and in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. **1.83**), in accordance with Resolution **418** (WRC-07). These stations shall not claim protection from other stations operating in accordance with Article 5. No. **5.43A** does not apply. (WRC-07)

5.447A The allocation to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

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

5.447C Administrations responsible for fixed-satellite service networks in the band 5 150 - 5 250 MHz operated under Nos. 5.447A and 5.447B shall coordinate on an equal basis in accordance with No. 9.11A with administrations responsible for non geostationary-satellite networks operated under No. 5.446 and brought into use prior to 17 November 1995. Satellite networks operated under No. 5.446 brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under Nos. **5.447A** and **5.447B**.

5.447D The allocation of the band 5 250 - 5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)

5.447F In the band 5 250 - 5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations **ITU-R M.1638** and **ITU-R SA.1632**. (WRC-03).

5.448A The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250 - 5 350 MHz shall not claim protection from the radiolocation service. No. **5.43A** does not apply. (WRC-03).

5.448B The Earth exploration-satellite service (active) operating in the band 5 350 - 5 570 MHz and space research service (active) operating in the band 5 460 - 5 570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5 350 - 5 460 MHz, the radionavigation service in the band 5 460 - 5 470 MHz and the maritime radionavigation service in the band 5 470 - 5 570 MHz. (WRC-03)

5.448C The space research service (active) operating in the band 5 350 - 5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. (WRC-03)

5.448D In the frequency band 5 350 - 5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. **5.449**. (WRC-03)

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

5.450 Additional allocation: in Austria, Azerbaijan, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470 - 5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC03)

5.450A In the band 5 470 - 5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation **ITU-R M.1638**. (WRC-03)

5.450B In the frequency band 5 470 - 5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600 - 5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)

5.451 Additional allocation: in the United Kingdom, the band 5 470 - 5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. **21.2**, **21.3**, **21.4** and **21.5** shall apply in the band 5 725 - 5 850 MHz.

5.452 Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorised to operate on a basis of equality with stations of the maritime radionavigation service.

5.453 Additional allocation: in Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kenya, Kuwait, Lebanon, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution 229 (WRC-03) do not apply. (WRC-03)

5.457A In the bands 5 925 - 6 425 MHz and 14 - 14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902** (WRC-03). (WRC-03)

5.457B. In the bands 5 925 – 6425 MHz and 14 – 14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902** (WRC-03) in Algeria, Saudi Arabia, **Bahrain**, Comoros, Djibouti, Egypt, United Arab Emirates, the Libyan Arab Jamahiriya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902** (WRC-03). (WRC-03)

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

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

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

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

5.460 The use of the band 7 145-7 190 MHz by the space research service (Earth-to-space) is restricted to deep space; no emissions to deep space shall be effected in the band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No.**5.43A** does not apply. (WRC-03)

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

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

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

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

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

These values are subject to study under Resolution **124** (WRC-97)². (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.

² Revised at WRC-2003

5.468 Additional allocation: in Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, the Libyan Arab Jamahiriya, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8 500- 8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

5.469A In the band 8 550 - 8 650 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service. (WRC- 97)

5.470 The use of the band 8 750 - 8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.

5.471 Additional allocation: in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, the Netherlands, Qatar and Sudan, the bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-07)

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

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

5.475 The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. (WRC-07)

5.475A In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. 5.337 operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. **5.471**. (WRC-07)

5.475B In the band 9 300-9 500 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, radars operating in the radionavigation service in conformity with the Radio Regulations. Ground-based radars used for meteorological purposes have priority over other radiolocation uses. (WRC-07)

5.4B07 The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)

5.476A In the band 9 300-9 800 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and radiolocation services. (WRC-07)

5.477 Different category of service: in Algeria, Saudi Arabia, **Bahrain**, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, 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-07)

5.478A The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band.

5.478B In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis.

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.

5.482 In the band 10.6-10.68 GHz, the power delivered to the antenna of stations of the fixed and mobile, except aeronautical mobile, services shall not exceed -3 dBW. This limit may be exceeded, subject to agreement obtained under No. **9.21**. However, in Algeria, Saudi Arabia, Armenia, Azerbaijan, **Bahrain**, Bangladesh, Belarus, Egypt, United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Jordan, Libyan Arab Jamahiriya, Kazakhstan, Kuwait, Lebanon, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Pakistan, Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, service is not applicable. (WRC-07)

5.482A For sharing of the band 10.6-10.68 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile, except aeronautical mobile, services, Resolution **751** (WRC-07) applies. (WRC-07)

5.483 Additional allocation: in Saudi Arabia, Armenia, Azerbaijan, **Bahrain**, Belarus, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Turkmenistan and Yemen, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-07)

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

5.484A The use of the bands 10.95 - 11.2 GHz (space-to-Earth), 11.45 - 11.7 GHz (space-to-Earth), 11.7 - 12.2 GHz (space-to-Earth) in Region 2, 12.2 - 12.75 GHz (space-to-Earth) in Region 3, 12.5 - 12.75 GHz (space-to-Earth) in Region 1, 13.75 - 14.5 GHz (Earth-to-space), 17.8 - 18.6 GHz (space-to-Earth), 19.7 - 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space), 29.5 - 30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.487 In the band 11.7 - 12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix **30**. (WRC-03)

5.487A Additional allocation: in Region 1, the band 11.7 - 12.5 GHz, in Region 2, the band 12.2 - 12.7 GHz and, in Region 3, the band 11.7 - 12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. **9.12** for coordination with other non-geostationary satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)

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

5.494 Additional allocation: in Algeria, Angola, Saudi Arabia, **Bahrain**, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, 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-03)

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

5.498A The Earth exploration-satellite (active) and space research (active) services operating in the band 13.25 - 13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)

5.500 Additional allocation: in Algeria, Angola, Saudi Arabia, **Bahrain**, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, the Syrian Arab Republic, 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-03)

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

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

5.502 In the band 13.75 - 14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed-satellite service in this band with an antenna size smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed:

- -115 dB(W/(m² • 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal State;

- -115 dB(W/(m² • 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained. For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)

5.503 In the band 13.75 - 14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

- in the band 13.77 - 13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed:

i) $4.7D + 28$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 1.2 m and less than 4.5 m;

ii) $49.2 + 20 \log(D/4.5)$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m;

iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m;

iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater;

- the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz. Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed

the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)

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

5.504A In the band 14 - 14.5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. (WRC-03)

5.504B Aircraft earth stations operating in the aeronautical mobile-satellite service in the band 14 - 14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation **ITU-R M.1643**, with respect to any radio astronomy station performing observations in the 14.47 - 14.5 GHz band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-03)

5.505 Additional allocation: in Algeria, Angola, Saudi Arabia, **Bahrain**, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad, Viet Nam and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-07)

5.506 The band 14 - 14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.

5.506A In the band 14 - 14.5 GHz, ship earth stations with an e.i.r.p. greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902** (WRC 03). This footnote shall not apply to ship earth stations for which the complete Appendix 4 information has been received by the Bureau prior to 5 July 2003. (WRC-03)

5.506B Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14 -14.5 GHz without the need for prior agreement from Cyprus, Greece and Malta, within the minimum distance given in Resolution **902** (WRC-03) from these countries. (WRC-03)

5.508A In the band 14.25 - 14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation **ITU R M.1643**, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-03)

5.509A In the band 14.3 - 14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation **ITU-R M.1643**, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-03)

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

5.511 Additional allocation: in Saudi Arabia, **Bahrain**, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Kuwait, Lebanon, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-07)

5.511A The band 15.43 - 15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43 - 15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**.

The use of the frequency band 15.43 - 15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation **ITU-R S.1341**. In order to protect the radio astronomy service in the band 15.35 - 15.4 GHz, the aggregate power flux-density radiated in the 15.35 - 15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43 - 15.63 GHz band shall not exceed the level of -156 dB(W/m²) in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time. (WRC-2000)

5.511C Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation **ITU-R S.1340**. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. **4.10** applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation **ITU-R S.1340**. (WRC-97)

5.511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4 - 15.43 GHz and 15.63 - 15.7 GHz in the space-to-Earth direction and 15.63 - 15.65 GHz in the Earth-to-space direction. In the bands 15.4 - 15.43 GHz and 15.65 - 15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of -146 dB(W/m²/MHz) for any angle of arrival. In the band 15.63 - 15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed -146 dB(W/m²/MHz) for any angle of arrival, it shall coordinate under No. **9.11A** with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63 - 15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. **4.10** applies). (WRC-97)

5.512 Additional allocation: in Algeria, Angola, Saudi Arabia, Austria, **Bahrain**, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Costa Rica, Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Montenegro, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Syrian Arab Republic, Serbia, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad, Togo and Yemen, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

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

5.514 Additional allocation: in Algeria, Angola, Saudi Arabia, **Bahrain**, Bangladesh, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan and Sudan, 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-07)

5.515 In the band 17.3-17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of § 1 of Annex 4 of Appendix **30A**

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

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix 30A, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

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

17.3 - 17.7 GHz (space-to-Earth) in Region 1, 18.3 - 19.3 GHz (space-to-Earth) in Region 2, 19.7 - 20.2 GHz (space-to-Earth) in all Regions, 39.5 - 40 GHz (space-to-Earth) in Region 1, 40 - 40.5 GHz (space-to-Earth) in all Regions

40.5 - 42 GHz (space-to-Earth) in Region 2, 47.5 - 47.9 GHz (space-to-Earth) in Region 1, 48.2 - 48.54 GHz (space-to-Earth) in Region 1, 49.44 - 50.2 GHz (space-to-Earth) in Region 1 and 27.5 - 27.82 GHz (Earth-to-space) in Region 1, 28.35 - 28.45 GHz (Earth-to-space) in Region 2, 28.45 - 28.94 GHz (Earth-to-space) in all Regions, 28.94 - 29.1 GHz (Earth-to-space) in Region 2 and 3, 29.25 - 29.46 GHz (Earth-to-space) in Region 2, 29.46 - 30 GHz (Earth-to-space) in all Regions, 48.2 - 50.2 GHz (Earth-to-space) in Region 2. This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution 143 (WRC-03). (WRC-03)

5.519 Additional allocation: the bands 18.0-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)

5.520 The use of the band 18.1 -18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service. (WRC-2000)

5.521 Alternative allocation: in Germany, Denmark, the United Arab Emirates and Greece, the band 18.1 - 18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. 5.33). The provisions of No. 5.519 also apply. (WRC-03)

5.522A The emissions of the fixed service and the fixed-satellite service in the band 18.6 - 18.8 GHz are limited to the values given in Nos. 21.5A and 21.16.2, respectively. (WRC-2000)

5.522B The use of the band 18.6 - 18.8 GHz by the fixed-satellite service is limited to geostationary systems and systems with an orbit of apogee greater than 20 000 km. (WRC-2000)

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

5.523A The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. 9.11A and No. 22.2 does not apply. Administrations having geostationary-satellite networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. 9.11A with non-geostationary-satellite networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-geostationary-satellite networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix 4 notification information is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

5.523B The use of the band 19.3 - 19.6 GHz (Earth-to-space) by the Fixed-satellite service is limited to feeder links for non geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. 9.11A, and No. 22.2 does not apply.

5.523C No. 22.2 of the Radio Regulations shall continue to apply in the bands 19.3 - 19.6 GHz and 29.1 -29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)

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

5.523E No. **22.2** shall continue to apply in the bands 19.6-19.7 GHz and 29.4 - 29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC97)

5.524 Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, **Bahrain**, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, 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-07)

5.525 In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz.

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

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

5.528 The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7 - 20.1 GHz in Region 2 and in the band 20.1 - 20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. **5.524**.

5.530 In Regions 1 and 3, the use of the band 21.4-22 GHz by the broadcasting-satellite service is subject to the provisions of Resolution **525** (Rev.WRC-07). (WRC-07)³

5.532 The use of the band 22.21 - 22.5 GHz by the Earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.

5.533 The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.

5.535 In the band 24.75-25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.

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

³ This Resolution was revised by WRC-03.

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

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account Recommendations **ITU-R SA.1278** and **ITU-R SA.1625**, respectively. (WRC-03)

5.536B In Germany, Saudi Arabia, Austria, Belgium, Brazil, Bulgaria, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Switzerland, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-07)

5.536C In Algeria, Saudi Arabia, **Bahrain**, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Rep. of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, the Syrian Arab Republic, Somalia, Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5 -27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-03)

5.537 Space services using non-geostationary satellites operating in the inter-satellite service in the band 27-27.5 GHz are exempt from the provisions of No. **22.2**.

5.537A In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145** (WRC-07)

5.538 Additional allocation: the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. (WRC-07)

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

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

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

5.541A Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1 - 29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix 4 coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix 4 information for coordination before this date are encouraged to utilize these techniques to the extent practicable. (WRC-2000)

5.542 Additional allocation: in Algeria, Saudi Arabia, **Bahrain**, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq,

Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC-07)

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

5.543A In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion as given in Recommendation **ITU-R RA.769**. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to -106 dB(W/MHz) under clear-sky conditions, and may be increased up to -100 dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions. See Resolution **145** (Rev.WRC-07). (WRC-07)

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.

5.546 Different category of service: in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, 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-07)

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 6466 GHz are available for high-density applications in the fixed service (see Resolution **75** (WRC-2000)). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.540 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

5.547A Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8 - 33.4 GHz band, taking into account the operational needs of the airborne radar systems. (WRC-2000)

5.548 In designing systems for the inter-satellite service in the band 32.3 - 33 GHz, for the radionavigation service in the band 32 - 33 GHz, and for the space research service (deep space) in the band 31.8 - 32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**). (WRC-03)

5.549 Additional allocation: in Saudi Arabia, **Bahrain**, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, 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-03)

5.549A In the band 35.5 - 36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed -73.3 dB(W/m²) in this band. (WRC-03)

5.550A For sharing of the band 36-37 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile services, Resolution **752** (WRC-07) shall apply. (WRC-07)

5.551H The equivalent power flux-density (epfd) produced in the band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth), or in the broadcasting-satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time:

-230 dB(W/m²) in 1 GHz and -246 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

-209 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station. These epfd values shall be evaluated using the methodology given in Recommendation **ITU-R S.1586-1** and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation **ITU-R RA.1631** and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{\min} of the radio-telescope (for which a default value of 5° should be adopted in the absence of notified information).

These values shall apply at any radio astronomy station that either:

- was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or
- was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply. Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743** (WRC-03) shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-07)

5.551I The power flux-density in the band 42.5 - 43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting-satellite service (space-to-Earth) operating in the 42 - 42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station:

-137 dB(W/m²) in 1 GHz and -153 dB(W/m²) in any 500 kHz of the 42.5 -43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

-116 dB(W/m²) in any 500 kHz of the 42.5 - 43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These values shall apply at the site of any radio astronomy station that either:

-was in operation prior to 5 July 2003 and has been notified to the Radiocommunication Bureau before 4 January 2004; or

-was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743** (WRC-03) shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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

5.552A The allocation to the fixed service in the 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** (Rev.WRC-07). (WRC-07)

5.553 In the bands 43.5 - 47 GHz and 66 - 71 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **5.43**). (WRC-2000)

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

5.554A The use of the bands 47.5 - 47.9 GHz, 48.2 - 48.54 GHz and 49.44 - 50.2 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary satellites. (WRC-03)

5.555 Additional allocation: the band 48.94 - 49.04 GHz is also allocated to the radio astronomy service on a primary basis. (WRC2000)

5.555B The power flux-density in the band 48.94 - 49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2 - 48.54 GHz and 49.44 - 50.2 GHz shall not exceed -151.8 dB(W/m²) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

5.556 In the bands 51.4 - 54.25 GHz, 58.2 - 59 GHz and 64 - 65 GHz, radio astronomy observations may be carried out under national arrangements. (WRC-2000)

5.556A Use of the bands 54.25 - 56.9 GHz, 57 - 58.2 GHz and 59 - 59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m² · 100 MHz) for all angles of arrival. (WRC-97)

5.557A In the band 55.78 - 56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to -26 dB(W/MHz). (WRC-2000)

5.558 In the bands 55.78 - 58.2 GHz, 59 - 64 GHz, 66 - 71 GHz, 122.25 - 123 GHz, 130 - 134 GHz, 167 - 174.8 GHz and 191.8 - 200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **5.43**). (WRC-2000)

5.558A Use of the band 56.9 - 57 GHz by inter-satellite systems is limited to links between satellites in geostationary-satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m² · 100 MHz) for all angles of arrival. (WRC-97)

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

5.560 In the band 78 - 79 GHz radars located on space stations may be operated on a primary basis in the earth exploration-satellite service and in the space research service.

5.561 In the band 74 - 76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service. (WRC-2000)

5.561A The 81 - 81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis. (WRC-2000)

5.562 The use of the band 94 - 94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars. (WRC-97)

5.562A In the bands 94-94.1 GHz and 130-134 GHz, transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. (WRC-2000)

5.562B In the bands 105-109.5 GHz, 111.8-114.25 GHz, 155.5-158.5 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-2000)

5.562C Use of the band 116 - 122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed -148 dB(W/(m² · MHz)) for all angles of arrival. (WRC-2000)

5.562E The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5 - 134 GHz. (WRC-2000)

5.562F In the band 155.5 - 158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018. (WRC-2000)

5.562G The date of entry into force of the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018. (WRC-2000)

5.562H Use of the bands 174.8 - 182 GHz and 185 - 190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival. (WRC-2000)

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

5.563B The band 237.9 - 238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only. (WRC-2000)

5.565 The frequency band 275-1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

-radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

- Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band. (WRC-2000)

Annex 3 – National Footnotes

BHR1 One or all of the secondary services allocated this band in ITU Region 1 is allocated on a national primary basis in Bahrain. Stations of such national primary services shall not cause harmful interference to stations of a primary service of administrations operating in accordance with Article 5 of the ITU Radio Regulations.

BHR2 This band may be used for low power, short range devices on an uncoordinated, non protected, shared basis. See also Annex 4.

BHR3 In a number of Region 1 countries, all or parts of the bands 495 – 505 kHz, 5250 – 5450 kHz and 70 – 70.5 MHz have been allocated nationally to the amateur service on a secondary and temporary basis for the purpose of propagation experiments. Such stations of the amateur service operate under the conditions of No.4.4 of the ITU Radio Regulations and are required not to cause harmful interference to stations of other administrations operating in accordance with Article 5 of the ITU Radio Regulations. The SSCC will investigate whether similar arrangements can be introduced in the Kingdom of Bahrain.

BHR4 *Additional Allocation:* In Bahrain the band 1850 - 2000 kHz is allocated nationally to the amateur service. Stations of the amateur service in Bahrain shall operate under the conditions of No.4.4 of the ITU Radio Regulations. Such stations shall not cause harmful interference to stations of other administrations operating in accordance with Article 5 of the ITU Radio Regulations. In this regard at a future ITU WRC, Bahrain intends to join No. 5.096 of the Radio Regulations concerning a secondary allocation to the amateur service in the band 1850 – 2000 kHz.

BHR5 The band 46-61 MHz may also be used in Bahrain for wind profiler radars operating in the radiolocation service on a secondary basis. Any such radars shall operate in accordance with Resolution 217 of ITU WRC-97.

BHR6 *Additional Allocation:* In Bahrain the bands 47-50 MHz and 50.5-61 MHz are allocated on a primary basis to the land mobile service. Stations of the land mobile service in Bahrain shall operate under the conditions of No.4.4 of the ITU Radio Regulations. Such stations shall not cause harmful interference to stations of other administrations operating in accordance with Article 5 of the ITU Radio Regulations.

BHR7 *Additional Allocation:* In Bahrain the band 50 - 50.5 MHz is allocated nationally to the amateur service on a primary basis and the band 50.5 – 52 MHz is allocated nationally to the amateur service on a secondary basis. Stations of the amateur service in Bahrain shall operate under the conditions of No.4.4 of the ITU Radio Regulations. Such stations shall not cause harmful interference to stations of other administrations operating in accordance with Article 5 of the ITU Radio Regulations.

BHR8 In the longer term VORs will be decommissioned in this band, after which the band will be exclusively allocated to the aeronautical mobile service.

BHR9 In the medium term 8.33 KHz channel spacing in the band 117.975-137 MHz may be introduced in accordance with regional plans developed under the auspices of the International Civil Aviation Organization (ICAO).

BHR10 The bands 157.45-157.95 MHz (Ship station transmit) and 162.05-162.55 MHz (Coast Station transmit) are designated for private maritime applications.

BHR11 The band 450 - 470 MHz is a candidate band for a variety of modern mobile technologies including GSM, TETRA, IS95, IMT as well as a residual band for analogue single and two frequency conventional and trunked mobile networks. A strategy for the future use of this band will be elaborated by the SSCC.

BHR12 The band 380-399.9 MHz is designated for digital trunked technology such as TETRA or TETRAPOL. and assigned for national security systems.

BHR13 Parts of the band 410-430 MHz are candidates for commercial digital trunked mobile systems utilizing technology such as TETRA. The band may also be utilized for commercial two frequency simplex PMR systems.

BHR14 The band 862- 870 MHz is for Short Range Devices (SRDs) and is partitioned as follows 864.8-865 MHz narrow band analogue voice devices, 863-865 MHz radio microphones, 869.2-869.25 MHz alarms for the elderly and infirm, 863-865 MHz wireless audio.

BHR15 The bands 870-876 MHz paired with 915-921 MHz are identified for Wide band Digital Land Mobile PMR systems.

BHR16 Segments of the bands 3700 – 4200 MHz, 7075 – 10 680 MHz, 12.75 – 13.25 GHz, 13.4 – 15.35 GHz, 17.7 – 19.7 GHz, 24.5 – 26.5 GHz are required for civil and government fixed services. The SSCC will conduct a study of these bands to identify the ITU-R channel arrangements currently in use, determine whether any changes are necessary in the light of current requirements, possible future developments and the other radiocommunication services allocated this spectrum. Subsequently the SSCC will apportion band segments to the relevant SMOs to meet requirements and where appropriate ensure compatibility with relevant ITU-R channel arrangements.

BHR17 The bands 2300 – 2400 MHz and 2500 – 2690 MHz are candidate bands for IMT. A strategy for the future use of these bands will be elaborated by the SSCC.

BHR18 *Additional Allocation:* In Bahrain this band is allocated on a national primary basis to the fixed service. Stations of the fixed service in Bahrain shall operate under the conditions of No.4.4 of the ITU Radio Regulations. Such stations shall not cause harmful interference to stations of other administrations operating in accordance with Article 5 of the ITU Radio Regulations. Bahrain will seek to join any applicable and relevant ITU radio regulations at a future ITU World Radiocommunication Conference.

BHR19 WRC-03 identified a number of frequency bands for high-density applications in the fixed satellite service (HDFSS) through No. 5.516B. The bands 27.5-27.82 GHz in Region 1, 28.45-28.94 GHz in all Regions and 29.46-30 GHz in Region 1 are among the bands identified. In Bahrain from 1 January 2009 the bands:

- 27.5-27.8285 GHz, 28.4445-28.8365 GHz and 29.4525-29.5 GHz are available for the use of uncoordinated FSS Earth stations,
- 28.8365-28.9485 GHz are available for the use of uncoordinated FSS Earth stations, without prejudice to the FS systems licensed prior to 1 January 2009,
- 27.8285-28.4445 GHz and 28.9485-29.4525 GHz are available for the use of FS systems.

BHR20 This band is not yet allocated to a Bahraini SMO to administer. An application shall be made to the SSCC if an assignment needs to be made within this band or if the band in question is required in its entirety for a particular application.

BHR21 The following spectrum is assigned to be made available for Public Protection and Disaster Relief (PPDR):

- For narrow band digital PPDR radio applications using channel spacing up to 25 kHz within the duplex bands 380-385 MHz / 390-395 MHz has been designated.

Annex 4 - Permitted short range devices (SRD)

Frequency Band	Type of Device	Maximum radiated power or Field strength limits	Duty cycle	ITU Emission/ Modulation	Relevant ETSI standard
125 KHz	Vehicle Immobilizer/ Car Access System (Inductive applications)	≤ 10 mW e.r.p.	0.02 %	64K0A1D/ ASK	EN 301 489 EN 300 330
134.2 KHz	Vehicle Immobilizer (Inductive applications)	≤ 60 dB μ A/m @ 10m	< 0.1 %	1K00A1D ASK	EN 301 489 EN 300 330
134.2 KHz	Vehicle Immobilizer (Inductive applications)	≤ 10 mW e.r.p.	< 0.1 %	Un-modulated Carrier	EN 301 489 EN 300 330
134.2 KHz	Smart LF Oscillator for Car	≤ 10 mW e.r.p./ ≤ 95 dB μ A/m @ 3m		1K00A1D ASK	EN 301 489 EN 300 330
134.45 KHz	Vehicle Immobilizer (Inductive applications)	≤ 0.1 mW e.r.p	$< 60\%$	1K10F1D FSK	EN 300 330 EN 301 489
134.45 KHz	Immobilizer (Inductive applications)	≤ 10 mW e.r.p		F1D	EN 300 330 EN 301 489
135-140 KHz	Passive Anti Theft System	≤ 10 mW e.r.p.		F1D	EN 300 330 EN 301 489
10.6 MHz	Wireless Hearing System	≤ 10 mW e.r.p.		F1D, FSK	EN 300 330 EN 301 489
13.56 MHz	Label Printers/ RFID for Notebook PC	≤ 10 mW e.r.p.		ASK	EN 300 330 EN 301 489
13.56 MHz	Toner Monitoring & Control for Printers	≤ 1 mW e.r.p.		FSK	EN 300 330 EN 301 489
304.3 MHz	Remote Keyless Entry System	≤ 10 mW e.r.p.		A1D	
313.8-313.9 MHz	Normal keyless Entry system	≤ 10 mW e.r.p.		FSK	
315 MHz	Normal keyless Entry system/Tire Pressure Monitoring Transmitter	≤ 10 mW e.r.p.	0.07%	59K5F1D/ 150KF1D/ FSK	

Frequency Band	Type of Device	Maximum radiated power or Field strength limits	Duty cycle	ITU Emission/ Modulation	Relevant ETSI standard
315 MHz	Normal keyless Entry system	≤ 10 mW e.r.p.	n/a	ASK	
418 MHz	Radio Touchscreen	≤ 1 mW e.r.p.	50%	ASK	
433.05-434.97 MHz	Normal keyless Entry system	≤ 10 mW e.r.p.	n/a	A1D	EN 300 220 EN 301 489
433.80-434.04 MHz	Keyless System	≤ 5 mW e.r.p.	Very Low	120KF1D	
433.92 MHz	Normal keyless Entry system	≤ 10 mW e.r.p.	< 0.1 %	5K00A1D ASK	EN 300 220 EN 301 489
433.92 MHz	Normal keyless Entry system	≤ 10 mW e.r.p.	< 0.1 %	FSK	EN 300 220 EN 301 489
433.92 MHz	RKE-Transmitter for Car	≤ 10 mW e.r.p.	< 0.1 %	GFSK	EN 300 220 EN 301 489
433.92 MHz	Normal keyless Entry system	≤ 50 mW e.r.p.			EN 300 220 EN 301 489
433.92 MHz 125 KHz	Tire Pressure Monitoring System/ Smart Entry & Engine Start	≤ 10 mW e.r.p. ≤ 10 mW e.r.p.		60K0F1D/ 5K00A1D/ FSK/ ASK	EN 300 220 EN 301 489
315 MHz 125 KHz	Smart Entry & Engine Start	≤ 10 mW e.r.p. ≤ 10 mW e.r.p.		FSK/ ASK	
433.92 MHz 132.45 KHz	Smart Transmitter for KIPASS System	≤ 100 mW e.r.p.		F1D, M1D	EN 300 330 EN 301 489
433.92 MHz 134.2 KHz	Electronic Key	≤ 10 mW e.r.p. ≤ 10 mW e.r.p.		60K0F1D 5K00A1D	EN 300 220 EN 300 330 EN 301 489
434 MHz	Monitoring Vacuum Sewerage System	≤ 10 mW e.r.p.	< 10 %		EN 300 220 EN 301 489
433.67 MHz 434.251 MHz	Remote Keyless Entry System	≤ 10 mW e.r.p.	0.02%	GFSK	EN 300 220 EN 301 489
520-775 MHz	Wireless Microphone	≤ 10 mW e.r.p.			
868.3 MHz	Normal keyless Entry system	≤ 25 mW e.r.p.		508KF1D 2-FSK	EN 300 220 EN 300 330 EN 301 489
868.4 MHz	Normal keyless	≤ 25 mW		508KF1D	EN 300 220

Frequency Band	Type of Device	Maximum radiated power or Field strength limits	Duty cycle	ITU Emission/ Modulation	Relevant ETSI standard
	Entry system	e.r.p		2-FSK	EN 300 330 EN 301 489
868.6625 MHz	Fire Alarm System	≤ 10 mW e.r.p		4K00F1D	EN 300 220 EN 300 330 EN 301 489
2412-2437-2462 MHz	Play station Portable Multimedia Entertainment	9.61 mW		DSSS	EN 300 328 EN 301 489
2400-2483.5 MHz	Bluetooth	≤ 1.75 mW e.r.p		FHSS	EN 300 328 EN 301 489
2400-2483.5 MHz	Bluetooth	≤ 2.56 mW e.r.p		FHSS	EN 300 328 EN 301 489
2400-2483.5 MHz	Bluetooth	≤ 3.18 mW e.r.p		FHSS	EN 300 328 EN 301 489
2.4 GHz	Bluetooth Module	≤ 3 mW e.r.p		1M00FXD GFSK(FHSS)	EN 300 328 EN 301 489
5725-5875 MHz	Motion Detection Sensor for Car	≤ 1 mW e.r.p			EN 300 440 EN 301 489
23.967-24.977 GHz	Vehicle Back-Up Aid Radar	0.063 mW		BPSK	EN 300 328 EN 301 489
24.10-24.25 GHz	Automotive Short Range Radar	0.05 mW			EN 300 328 EN 301 489
2400-2483.5 MHz	Vehicle Audio & Navigation Sys.	≤ 10 mW e.r.p	Very High	FHSS	EN 300 328 EN 301 489
2400-2483.5 MHz	Cordless Keyboard/Mouse	≤ 10 mW e.r.p	n/a	GFSK	EN 300 440 EN 301 489
2400-2483.5 MHz	Wireless Vibration Transmitter/ Bluetooth Module	≤ 100 mW e.r.p	Very High	DSSS	EN 300 328 EN 301 489
2400-2483.5 MHz	Vehicle Communication via Bluetooth	≤ 2.5 mW e.r.p	Very High	GFSK	EN 300 328 EN 301 489
2400-2483.5 MHz	Audio Control Unit for Cars	≤ 10 mW e.r.p	Very High	FHSS	EN 300 328 EN 301 489
24.150-24.250 GHz	Aid System for Cars	≤ 100 mW e.r.p			EN 300 440 EN 301 489
76.5 GHz	Sensor Assy	≤ 4 W e.r.p	≤ 50%	200MQXN	EN 301 091

Frequency Band	Type of Device	Maximum radiated power or Field strength limits	Duty cycle	ITU Emission/ Modulation	Relevant ETSI standard
	Millimeter Wave Radar (SRR)				EN 301 489
76.5 GHz	Field Disturbance Sensor	≤ 1.585 W e.r.p	$\leq 50\%$	1M20F1D	EN 301 091 EN 301 489