Lesotho National Radio Frequency Spectrum Allocation Plan (LN RFSAP)

8.3kHz – 3000 GHz

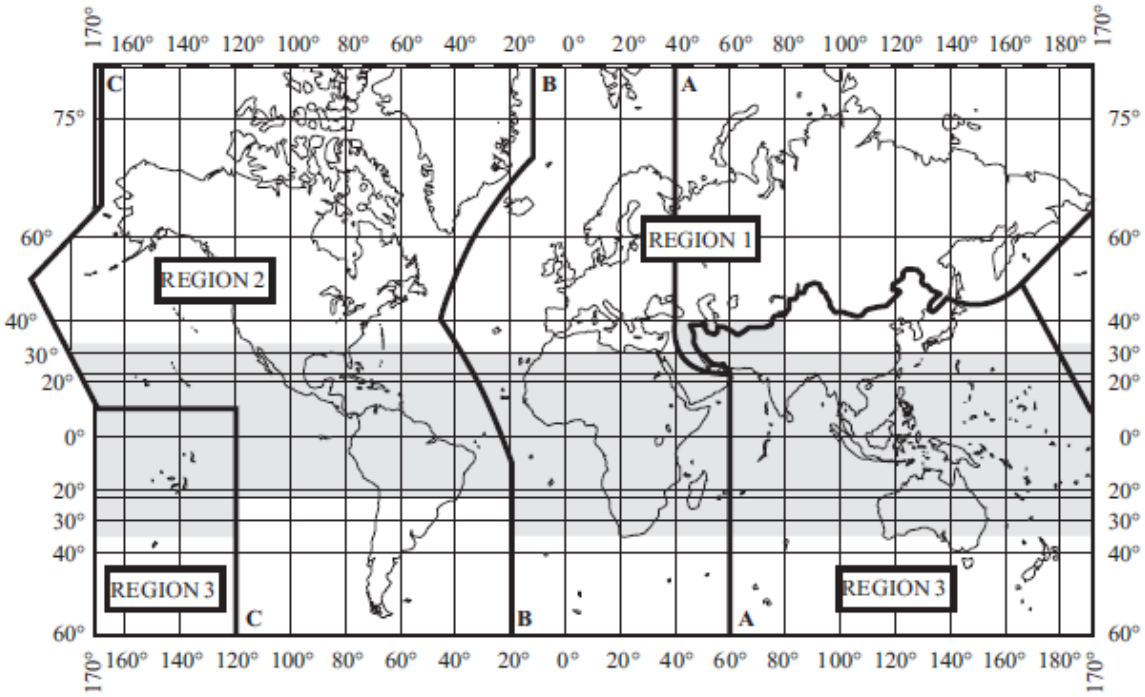
Revised September 2020.

1. INTRODUCTION

The spread of Information and Communications Technologies (ICTs) continues to facilitate technological change in the digital economy. The rapid diffusion and innovations in the radio communications services, such as mobile telephony, are facilitating more inclusive social and economic development. Nonetheless, for radio communications services to flourish, effective radio frequency spectrum management is required. This implies, inter alia, regulators are required to actively look for means to establish National Radio Frequency Spectrum Allocation Plans (RFSAP) that would foster innovation and investments in the radio communications markets. Further, harmonisation among the Regional Economic Communities (RECs) in regards to spectrum management and allocation is a key value add as it allows achievement of system interoperability; effective cross border coordination; achievement of economies of scale; increased proliferation of technologies and devices as well as affords roaming to the the Southern African Development Community (SADC). As an end result, allowing regional integration and creation of a common market.

SADC agreed to development of a regional Radio Frequency Spectrum Allocation Plan (RFSAP) that provides for a harmonised framework on the allocation of the radio frequency spectrum in SADC. It should be recognised on the onset that there would be some variances in the use of some of radio frequency spectrum bands in SADC countries due to, amongst others, legacies in system deployments, different timelines in the introduction of new technologies, different services and technology requirements as well as different bandwidth requirements. Nonetheless, despite the fact that it would not be possible to completely align the use of the spectrum over all frequency bands between SADC Member States, there is significant harmonisation already existing in assignments in many frequency bands. In order to achieve significant harmonization, SADC Members are urged, while respecting their sovereign rights, to implement radiocommunications services in accordance to this SADC RFSAP as far as is practically possible.

Achieving global harmonisation in spectrum allocation could be an attractive option to afford wider benefits to the digital economy, unfortunately, this is rarely achieved due to several factors including, promotion and protection of regional markets; and differences in the use and application of the radio frequency spectrum. The International Telecommunication Union (ITU) strives to achieve global spectrum harmonisation but has settled to achieving regional harmonisation. To this extend, the ITU divided the world into three (3) Radio Regions, as indicated in the figure below. Africa is part of ITU Radio Region 1 which also comprises of Western Europe and the Russian Federation (as well as other Eastern European countries). Within these Radio Regions, the radio frequency spectrum is allocated to various radiocommunication services (see ITU Radio Regulations, Article 5). It is also important to note that frequency bands are almost always allocated to more than one radiocommunication services, from which countries may then choose one or more service applicable to the particular country.



Whereas harmonisation is important, this could however take place on various levels, namely; allocation level (e.g. mobile service), application level (e.g. cellular mobile) or on technology level (e.g. LTE or mobile WiMAX). Although the ITU spectrum harmonisation is generally limited to the first level (i.e. radio communication services) it does occasionally also endeavours to harmonise certain applications. A noteworthy example is where a particular band is "*identified*" for a specific application such as the International Mobile Telecommuncations ("IMT"). Although such identification does not establish any priority in the Radio Regulations, or does not exclude the use of the particular frequency band for any other application within the same or other allocations, it does signal to the market the potential of harmonising the particular frequency band for the specified application. Within this application, various technologies could then be deployed. In the above-mentioned example of IMT, the ITU recommends six (6) mobile standards. Deviations from the regional allocations are generally recorded in the ITU Radio Regulations as country footnotes applicable to an individual country or to a group of countries.

Since Africa is part of ITU Region 1, harmonisation in the use of the radio frequency spectrum between Africa and Europe naturally aligns and there is, therefore, a general tendency for African countries to trail radio technology developments from Europe. The same applies for SADC. Nevertheless, since Africa is a large continent with diverse country requirements and needs in the use of the radio frequency spectrum, and since individual countries are at different levels of implementation of new wireless technologies, harmonisation within Africa and even between SADC countries is quite challenging. There are deviations between SADC countries, in particular regarding technology applications where, for example, technologies from Radio Regions 2 or 3 have been introduced in some countries. Although this is acceptable, its potential impact on harmonisation and the effective use of the radio frequency spectrum must be considered carefully.

2. BACKGROUND

Based on the work of Comunications Regulators' Association of Southern Africa (CRASA), SADC established the 2020 edition of SADC RFSAP in Maputo - Mozambique in February 2020. This edition covers the frequency bands from 8.3 kHz to 3000 GHz.

Since the development of the SADC FAP 2016, ITU conducted the World Radiocommunication Conference 2019 (WRC-19) in Sharm El-Sheikh, Egypt from 28 October 2019 to 22 November 2019 which made changes to the ITU Radio Regulations (ITU-RR) as a result of the Conference decisions. This edition of the LN RFSAP seeks to align to these changes and also reflect all other radio frequency spectrum usage needs of the SADC region.

3. STRUCTURE OF LN RFSAP

The LN RFSAP 2020 was developed taking into account international best practice in the development of frequency band plans and considering the needs of Lesotho and the SADC Members. This LN RFSAP has maintained a certain format. In reading LN RFSAP, the following meaning is attached to the four (4) columns:

a. First Column: ITU Region 1 Allocations and Footnotes

This column is an exact replica[1] of the frequency allocations for ITU Radio Region 1 as contained in the Radio Regulations (edition 2016) and as amended at WRC-19. All ITU footnotes, whether relevant to SADC countries or not, are therefore also included in this column. Frequency sub-bands are aligned with ITU Radio Regulations Article 5. The ITU philosophy for reflecting radiocommunication services in terms of primary and secondary, placing of footnotes and using French alphabetical order, therefore, also applies. Of particular importance is to note the following:

- PRIMARY services are printed in capitals;
- SECONDARY services are printed in lower case;
- The order of listing in each frequency band does not establish priority (listed alphabetically according the French language);
- Where a footnote is printed next to a service that footnote applies only to that service;
- Where a footnote is printed at the bottom of a frequency band that footnote applies to more than one service or all services allocated to the particular frequency band;

For more detail on these and other principles refer to the latest edition of the ITU Radio Regulations.

[1] Errors and omissions expected. Readers are referred to the actual ITU Radio Regulations

b. Second Column: SADC Common Allocation/s and Relevant ITU Footnotes

This column denotes those radiocommunication service or services selected from the ITU allocations, which are recommended for common use within SADC countries. A "common" allocation is generally where nine (9) or more countries support a particular allocation. However, this column reflects all ITU listed services where there is no clear single "common" use or where the sub-band in question is not widely used within SADC countries. This will apply, for example, to the science services and the higher frequency bands where applications within the ITU allocations are not yet evident or mainstream.

ITU footnotes which are underlined (e.g. 5.70) indicates that one or more SADC member country name is reflected in the particular footnote. These ITU footnotes are also listed in the table in Annex C. All SADC countries will review these footnotes as part of the preparation towards WRC-23 to ascertain the need to have their country names reflected in a particular footnote. SADC members should also consider the possibility to add their country names to an existing footnote at WRC-23 as part of the conference preparatory process. This column also lists only those ITU footnotes relevant to SADC Member countries, i.e. non-SADC related ITU footnotes have been omitted from this column. It should however be noted that non-listed ITU footnotes may indirectly still be relevant to SADC countries, for example, those SADC countries to the north of the SADC region who borders with non-SADC countries will have to consider other ITU footnotes which maybe deals with their non-SADC neighbours. Countries are therefore advised to consider all ITU footnotes during their normal international frequency management exercises.

References to SADC footnotes (e.g. "SADC1"), which are contained in Annex D, are also listed in this column. The main purpose of these SADC footnotes is to reflect country variations from the SADC common allocations. Most of these footnotes were brought forward from the previous Frequency Allocation Plan. In preparation of SADC RFSAP these footnotes have been verified and most could be deleted for various reasons. Some of the footnotes could however not be verified due to the relevant Members not being present during the preparations and these were therefore retained. Going forward all SADC Members should review these footnotes. Ideally, these variations should be limited since it steers away from the harmonised use of the radio frequency spectrum within the SADC Region. Member States are therefore invited to revaluate the relevance of their respective footnotes with a view to deleting country names from subsequent editions of the RFSAP.

c. Third Column: Lesotho National Radio Frequency Spectrum Allocation Sub-allocations / Utilisation

The Lesotho National Radio Frequency Spectrum Allocation Plan is intended to respond to Lesotho domestic spectrum requirements though the allocations are based on ITU and SADC allocations. It should be noted that where necessary, the plan will differ from SADC and ITU plans.

Common utilisation of a particular frequency band or sub-band is reflected in this column. It could also limit an application to a smaller sub-band where needed or could indicate a broader

sub-allocation where the application extends over more than one ITU frequency band. Where no sub-band is contained within this column it implies that the band limits as used in columns 1 and 2 also apply to this application.

This column therefore contains more detail in terms of the common application or applications that are used within the band and is a clear indication of the main use of a particular frequency band. Although it is still possible to use a band for a purpose other than the common use, it means that such use in not prevalent in many countries (i.e. generally less than 9 countries).

Where this column is empty it could be interpreted that the particular frequency band or sub-band is either currently not in use in Lesotho or that the use of the band could not be confirmed at the time of preparing the LN RFSAP. A typical example will be the use of the higher frequency bands (e.g. above 40 GHz where there are currently very little usage of radio frequency spectrum) or for example in the bands used by science services where the specific science application were not clear at the time of preparing LN RFSAP.

Limitations in the use of a particular frequency band, according to the ITU Radio regulations, are also reflected in this column.

d. Fourth Column: Sub-allocations

References to sub-allocations for the Kingdom of Lesotho are contained in this column, for example, frequency bands, services, references to relevant ITU Radio Regulations Articles and Appendices, ITU-R Recommendations.

Technical limits applicable to one or more services are included in this column where needed.

4. FUTURE WORK OR ISSUES TO BE CONSIDERED

During the course of preparing SADC and LN RFSAP 2020, the following items were identified as issues requiring additional work for inclusion in future frequency Band Plans. These are:

a. Current and future use of satellite systems

Several new satellite systems have been or are in the process of being launched. These satellite systems operate in various frequency bands.. It is important for SADC countries to consider the systems that will operate within the Region in order to assess the relevant frequency requirements, considering in particular that some frequency bands previously identified for these systems are now used extensively for other services.

The future implementation of IMT 2020 and satellite systems in the same spectrum bands will require further study.

b. Defining PMR/PAMR use within the Region

The harmonisation of Public Mobile Radio (PMR)/ Public Access Mobile Radio (PAMR) needs further investigation and refinement. The CRASA Electronic Communications Committee (ECC) has since undertaken to carry out this task.

c. ITU RR footnotes containing SADC country names to be reviewed for WRC-23

Footnotes in the ITU Radio Regulations containing one or more SADC country names will be reviewed as part of the preparation towards WRC-23 with the objective to delete country names where required. Following WRC-23 these changes will be incorporated in a future version of the SADC and LN RFSAP. SADC members should also consider the possibility to add their country names to an existing footnote at WRC-23 as part of the conference preparatory process.

d. Define use of SRDs in the SADC Region

Several frequency bands are used for short range devices. Whereas some countries are aligned with Europe's European Research Council (ERC) Recommendation 70-03, some countries also introduced Short Range Devices (SRDs) from other Radio Regions. As an interim measure it was decided to make reference to ITU-R Recommendation ITU-R SM.2153 This recommendation is in the process of being updated within the work of ITU-R Study Group 1 (Working Party 1B). All SADC countries need to consider the use of SRDs in their respective countries in view of reflecting these changes in a future version of the SADC RFSAP. The use of Radio Frequency Indentification (RFIDs) are also be included as part of this exercise.

e. Define use of science services within the SADC Region

Most of the frequency bands used for science services is international in nature. Whereas some systems operate directly from SADC countries, others do not, although the benefits of these systems are obtained indirectly, for example pertaining to research on climate change. Other services such as space research are not always relevant to any SADC country. In some case these applications apply to only one or two countries. The same applies to radio astronomy, which is not directly relevant to all countries. In order to accommodate these systems and ensure the necessary protection of these systems it is necessary to further investigate the application of these systems within SADC and to ensure that the necessary applications are reflected.

f. "CRASA harmonised framework for BWA growth in SADC" to be updated

This document was developed some years ago and provided an excellent guide to countries in the use of broadband wireless access especially as it pertains to "spectrum licence exempted" frequency bands. Due to the evolution of technologies and the decisions made at previous WRCs, there is a need to update this document.

g. Channelling plans for various systems

The frequency channelization of several key frequency bands must be developed and preferably harmonised throughout SADC. These include, amongst others, frequency bands used for IMT, Broadband Fixed Wireless Access (BFWA), Point to Point (PTP) microwave systems, etc. The intention is that the adopted channelling plans be added to the SADC RFSAP

in future editions of the Plan.(Refer: Harmonized Radio Frequency Plan Channeling Arrangements for Terrestrial Fixed and Mobile systems in SADC)

h. HF frequency bands and below

The use of the radio frequency spectrum below 30 MHz (i.e. VLF, LF, MF and HF) has changed dramatically over the last years. Although the frequency band 9 kHz to 19 995 kHz was added only in SADC RFSAP, it was felt that all frequency bands below 30 MHz should be re-evaluated extensively in order to reflect the changes in the use of these bandsin a subsequent versions of the Plan.

I. Government use

It was agreed by SADC members that frequency bands used exclusively by governments for both civil and security applications be indicated as “Government use”. This was mainly because the applications would generally be sensitive and classified in nature.

5. FUTURE AMENDMENTS

SADC RFSAP shall be amended preferably not later than 12 months after the conclusion of the previous World Radio Conference (WRC). This will ensure that the updating of the SADC RFSAP is a continuation of the WRC process and is done while the discussions from the WRC are still fresh in the minds of those involved in the updating of the SADC RFSAP. This is done taking into consideration that the ITU-R Radio Regulations only become available at least nine (9) months from the last date of the WRC.

In order to create stability and certainty in the market it is necessary that the SADC RFSAP do not change too frequently; however, it is possible that the SADC FAP could be updated prior to a WRC in order to accommodate some of the outstanding issues as listed above.

6. FREQUENCY MIGRATION OR RE-FARMING

As a result of the introduction of new services and technologies, it may be required for some frequency bands to be re-farmed. Due to the complexities of re-farming, the potential huge costs associated with such exercise as well as the different stages in application within the various SADC countries this matter has not been addressed in detail in SADC RFSAP. Although the issue of migration was considered, it was resolved that it would be addressed in relevant separate documents, in most cases on a national level in accordance with national requirementsand time scales.

7. ANNEXES

The following additional information is contained as annexes to LN RFSAP:

- Annex A: Satellite Planned Bands orbital slots relevant to SADC countries
- Annex B: Satellite Planned Bands relevant to SADC countries
- Annex C: ITU RR footnotes with reference to SADC countries
- Annex D: SADC country footnotes relevant to SADC RFSAP
- Annex E: List of ITU Radio Regulations footnotes
- Annex F: List of Acronyms
- Annex G: SADC harmonised HF cross border frequencies

LESOTHO TABLE OF FREQUENCY ALLOCATIONS

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
Below8.3 kHz (Not allocated) 5.53 5.54	**Below8.3 kHz** (Not allocated) 5.53 5.54	**Below8.3 kHz** (Not allocated) 5.53 5.54				
8.3 – 9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	**8.3 – 9 kHz** METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	8.3 – 9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C				
9 – 11.3 kHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9 – 11.3 kHz** METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9-11.3 kHz** RADIONAVIGATION				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
11.3-14 kHz RADIONAVIGATION	**11.3-14 kHz** RADIONAVIGATION	**11.3-14 kHz** RADIONAVIGATION				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
14-19.95 kHz FIXED MARITIME MOBILE 5.57 5.555.56	**14-19.95 kHz** FIXED MARITIME MOBILE 5.57 5.56	**14-19.95 kHz** FIXED 5.56				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
19.95-20.05 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)				
20.05-70 kHz FIXED MARITIME MOBILE 5.57 5.565.58	**20.05-70 kHz** FIXED MARITIME MOBILE 5.57 5.56	20.05-70 kHz FIXED LAND MOBILE 5.56				
70-72 kHz RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
72-84 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	**72-84 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	**72-84 kHz** FIXED RADIONAVIGATION 5.60 5.56				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
84-86 kHz RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
86-90 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	**86-90 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	**86-90 kHz** FIXED RADIONAVIGATION 5.56				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
90-110 kHz RADIONAVIGATION 5.62 Fixed 5.64	**90-110 kHz** RADIONAVIGATION 5.62 Fixed 5.64	**90-110 kHz** RADIONAVIGATION 5.62 Fixed 5.64				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
110-112 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	**110-112 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.64	**110-112 kHz** FIXED RADIONAVIGATION 5.64				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
112-115 kHz RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
115-117.6 kHz RADIONAVIGATION 5.60 Fixed Maritime mobile 5.645.66	**115-117.6 kHz** RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64	**115-117.6 kHz** RADIONAVIGATION 5.60 Fixed 5.64				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
117.6-126 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**117.6-126 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**117.6-126 kHz** FIXED RADIONAVIGATION 5.60 5.64				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
126-129 kHz RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
129-130 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED RADIONAVIGATION 5.60 5.64				SRDs- inductive short-range radiocommunications (9 -135 kHz) Navigational Aids(ITU-R Rec.SM2153
130-135.7 kHz FIXED MARITIME MOBILE 5.64 5.67	**130-135.7 kHz** FIXED MARITIME MOBILE 5.64	**130-135.7 kHz** FIXED 5.64				
135.7-137.8 kHz FIXED MARITIME MOBILE Amateur 5.67A 5.64 5.67 5.67B	**135.7-137.8 kHz** FIXED MARITIME MOBILE Amateur 5.67A 5.64	**135.7-137.8 kHz** FIXED LAND MOBILE Amateur 5.67A 5.64 Amateur 5.67A 5.64				Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p).
137.8-148.5 kHz FIXED MARITIME MOBILE 5.645.67	**137.8-148.5 kHz** FIXED MARITIME MOBILE 5.64	**137.8-148.5 kHz** FIXED LAND MOBILE 5.64				
148.5-255 kHz BROADCASTING 5.68 5.69 5.70	**148.5-200 kHz** BROADCASTING 5.68	**148.5-200 kHz** BROADCASTING 5.68				Frequency Assignment Plan (GE75) applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
	200-255 kHz AERONAUTICAL RADIONAVIGATION SERVICE 5.70	**200-255 kHz** AERONAUTICAL RADIONAVIGATION SERVICE 5.70				
255-283.5 kHz BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70	**255-283.5 kHz** AERONAUTICAL RADIONAVIGATION 5.70	**255-283.5 kHz** AERONAUTICAL RADIONAVIGATION 5.70				
283.5-315 kHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74	**283.5-315 kHz** AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74	**283.5-315 kHz** AERONAUTICAL RADIONAVIGATION 5.72 5.74				
315-325 kHz AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	**315-325 kHz** AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	**315-325 kHz** AERONAUTICAL RADIONAVIGATION 5.72				
325-405 kHz AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION				
405-415 kHz RADIONAVIGATION 5.76	**405-415 kHz** RADIONAVIGATION 5.76	**405-415 kHz** AERONAUTICAL RADIONAVIGATION 5.76				
415-435 kHz	**415-435 kHz**	**415-435 kHz** AERONAUTICAL				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	RADIONAVIGATION				
435-472 kHz MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82	**435-472 kHz** MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82					Res.339, Articles 31 and 52 apply.
472-479 kHz MARITIME MOBILE 5.79 Amateur 5.A123 Aeronautical radionavigation 5.77 5.80 5.82 5.B123	**472-479 kHz** MARITIME MOBILE 5.79 Amateur 5.A123 Aeronautical radionavigation 5.77 5.80 5.82 5.B123	**435-495 kHz** MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82				
479-495 kHz MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.82	**479-495 kHz** MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.82					
495-505 kHz MARITIME MOBILE 5.82C	**495-505 kHz** MARITIME MOBILE 5.82C	**495-505 kHz** MOBILE 5.82A 5.82B				Articles 31 and 52 apply.
505-526.5 kHz MARITIME MOBILE 5.79 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5 kHz** MARITIME MOBILE 5.79 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5 kHz** AERONAUTICAL RADIONAVIGATION 5.72				Articles 31 and 52 apply.

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
526.5-1 606.5 kHz BROADCASTING 5.87	**526.5-535 kHz** BROADCASTING Mobile 5.87	**526.5-535 kHz** BROADCASTING Mobile 5.87				MW Sound broadcasting GE75 plan applies
	535-1 606.5 kHz BROADCASTING 5.87	**535-1 606.5 kHz** BROADCASTING 5.87				
1 606.5-1 625 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	**1 606.5-1 625 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	**1 606.5-1 625 kHz** FIXED LAND MOBILE 5.92				
1 625-1 635 kHz RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION 5.93				Navigational Aids
1 635-1 800 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	**1 635-1 800 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	**1 635-1 800 kHz** FIXED LAND MOBILE 5.92				
1 800-1 810 kHz RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION 5.93				
1 810-1 850 kHz AMATEUR 5.98 5.99 5.100 5.101	**1 810-1 850 kHz** AMATEUR 5.98 5.100 5.101	**1 810-1 850 kHz** AMATEUR 5.98 5.100 5.101				
1 850-2 000 kHz FIXED MOBILE except aeronautical mobile 5.92 5.96 5.103	**1 850-2 000 kHz** FIXED MOBILE except aeronautical mobile 5.92 5.103	**1 850-2 000 kHz** FIXED MOBILE except aeronautical mobile 5.92 5.103				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
2 000-2 025 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 000-2 025 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 000-2 025 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103				
2 025-2 045 kHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.92 5.103 5.104	**2 025-2 045 kHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.92 5.103 5.104	**2 025-2 045 kHz** **FIXED** MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103				
2 045-2 160 kHz FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** LAND MOBILE 5.92				
2 160-2 170 kHz RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION FIXED LAND MOBILE 5.93 5.107				Navigational aids
2 170-2 173.5 kHz MARITIME MOBILE	**2 170-2 173.5 kHz** MARITIME MOBILE	**2 170-2 173.5 kHz** RESERVED				
2 173.5-2 190.5 kHz MOBILE (distress and calling) 5.108 5.109 5.110 5.111	**2 173.5-2 190.5 kHz** MOBILE (distress and calling) 5.108 5.109 5.110 5.111	**2 173.5-2 190.5 kHz** MOBILE (distress and calling) 5.108 5.109 5.110 5.111.				2 182 kHz is an international distress and calling frequency for radiotelephony. 2 187.5 kHz – DSC for distress and calling; Article 31 applies. 2 174.5 kHz – international distress frequency for NBDP telegraphy; Article 31 applies.
2 190.5-2 194 kHz	**2 190.5-2 194 kHz**	**2 190.5-2 194 kHz**				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
MARITIME MOBILE	MARITIME MOBILE	RESERVED				
2 194-2 300 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.112	**2 194-2 300 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 194-2 300 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103				
2 300-2 498 kHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	**2 300-2 498 kHz** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103	**2 300-2 498 kHz** FIXED MOBILE except aeronautical mobile (R) 5.103				
2 498-2 501 kHz STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	**2 498-2 501 kHz** STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	**2 498-2 501 kHz** STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)				
2 501-2 502 kHz STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL				
2 502-2 625 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.114	**2 502-2 625 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 502-2 625 kHz** MOBILE except aeronautical mobile (R) 5.92 5.103				
2 625-2 650 kHz MARITIME MOBILE MARITIME RADIONAVIGATION	**2 625-2 650 kHz** MARITIME MOBILE MARITIME RADIONAVIGATION	**2 625-2 650 kHz** RESERVED				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
5.92	5.92					
2 650-2 850 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 650-2 850 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	**2 650-2 850 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103				
2 850-3 025 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**2 850-3 025 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	**2 850-3 025 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115				3 023 kHz may be used under the MMS for search and rescue operations (see Article 31) Appendix 27 Allotment Plan applies.
3 025-3 155 kHz AERONAUTICAL MOBILE (OR)	**3 025-3 155 kHz** AERONAUTICAL MOBILE (OR)	3 025-3 155 kHz AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
3 155-3 200 kHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	**3 155-3 200 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116	**3 155-3 200 kHz** MOBILE except aeronautical mobile (R) 5.116	3155 kHz	3195 kHz	SRDs: Wireless hearing Aids	Worldwide channel for low power hearing aids (3155-3195 kHz). Additional channels may be assigned in the band 3155-3400 kHz; see also ITU-R SM.2153
3 200-3 230 kHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	**3 200-3 230 kHz** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	**3 200-3 230 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116	.			Worldwide channel for low power hearing aids (3155-3195 kHz). Additional channels may be assigned in the band 3155-3400 kHz
3 230-3 400 kHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118	**3 230-3 400 kHz** FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116	**3 230-3 400 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116				Worldwide channel for low power hearing aids (3155-3195 kHz). Additional channels may be assigned in the band 3155-3400 kHz.
3 400-3 500 kHz AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
3 500-3 800 kHz AMATEUR FIXED MOBILE except aeronautical mobile 5.92	**3 500-3 800 kHz** AMATEUR FIXED MOBILE except aeronautical mobile 5.92	**3 500-3 800 kHz** AMATEUR FIXED MOBILE except aeronautical mobile (R) 5.92				
3 800-3 900 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 800-3 900 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 800-3 900 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE				Appendix 26 Allotment Plan applies
3 900-3 950 kHz AERONAUTICAL MOBILE (OR) 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) BROADCASTING 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) BROADCASTING 5.123				Appendix 26 Allotment Plan applies
3 950-4 000 kHz FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING				
4 000-4 063 kHz FIXED MARITIME MOBILE 5.127 5.126	**4 000-4 063 kHz** FIXED MARITIME MOBILE 5.127	**4 000-4 063 kHz** FIXED 5.127				
4 063-4 438 kHz MARITIME MOBILE 5.79 5.109 5.110 5.128 5.130 5.131 5.132	**4 063-4 438 kHz** MARITIME MOBILE 5.79 5.109 5.110 5.128 5.130 5.131 5.132	**4 063-4 438 kHz** RESERVED			Not allocated	RESERVED
4 438-4 488 kHz FIXED	**4 438-4 488 kHz** FIXED	**4 438-4 650 kHz** FIXED				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
MOBILE except aeronautical mobile (R) Radiolocation 5.132A 5.132B	MOBILE except aeronautical mobile (R) Radiolocation 5.132A 5.133B	MOBILE except aeronautical mobile (R)				
4 488 -4 650 kHz FIXED MOBILE except aeronautical mobile (R)	**4 488 -4 650 kHz** FIXED MOBILE except aeronautical mobile (R)					
4650 – 4700 kHz AERONAUTICAL MOBILE (R)	**4650 – 4700 kHz** AERONAUTICAL MOBILE (R)	**4 650-4 700 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
4 700-4 750 kHz AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
4 750-4 850 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	**4 750-4 850 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	**4 750-4 850 kHz** AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113				
4 850-4 995 kHz FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** LAND MOBILE BROADCASTING 5.113				
4 995-5 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	**4 995-5 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	**4 995-5 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)				
5 003-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
5 005-5 060 kHz FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113				
5 060-5 250 kHz FIXED Mobile except aeronautical mobile 5.133	**5 060-5 250 kHz** FIXED Mobile except aeronautical mobile	**5 060-5 250 kHz** FIXED Mobile except aeronautical mobile				SADC harmonised HF frequencies for cross-border mobile communications
5 250-5 275 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A **5.133A**	**5 250-5275 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A 5.133A	**5 250-5 450 kHz** FIXED MOBILE except aeronautical mobile Aeronautical mobile Amateur				SADC harmonised HF frequencies for cross-border mobile communications
5 275 -5 351.5kHz FIXED MOBILE except aeronautical mobile	**5 275 -5 351.5kHz** FIXED MOBILE except aeronautical mobile					
5 351.5 -5 366.5 kHz FIXED MOBILE except aeronautical mobile Amateur 5.133B	**5 351.5 -5 366.5 kHz** FIXED MOBILE except aeronautical mobile Amateur 5.133B					
5 366.5 -5 450 kHz FIXED MOBILE except aeronautical mobile	**5 366.5 -5 450 kHz** FIXED MOBILE except aeronautical mobile					
5 450 kHz – 5 480 kHz	**5 450 kHz – 5 480 kHz**	**5 450-5 480 kHz**				Appendix 27 Allotment plan applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	AERONAUTICAL MOBILE (OR)				
5 480-5 680 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**5 480-5 680 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	**5 480-5 680 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115				Appendix 27 Allotment Plan applies
5 680-5 730 kHz AERONAUTICAL MOBILE (OR) 5.111 5.115	**5 680-5 730 kHz** AERONAUTICAL MOBILE (OR) 5.111 5.115	**5 680-5 730 kHz** AERONAUTICAL MOBILE (OR) 5.111 5.115				Appendix 26 Allotment Plan applies 5 680 kHz may be used under the MMS for search and rescue operations (see Article 31). 6215 kHz – use of this frequency prescribed in Article 31.
5 730-5 900 kHz FIXED LAND MOBILE	**5 730-5 900 kHz** FIXED LAND MOBILE	**5 730-5 900 kHz** LAND MOBILE				
5 900-5 950 kHz BROADCASTING 5.134 5.136	**5 900-5 950 kHz** BROADCASTING 5.134 5.136	**5 900-5 950 kHz** BROADCASTING 5.134 5.136				Article 12 Planning Procedures and Res.517 apply.
5 950-6 200 kHz BROADCASTING	**5 950-6 200 kHz** BROADCASTING	**5 950-6 200 kHz** BROADCASTING				ITU RR Article 12 Planning Procedures applies
6 200-6 525 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	**6 200-6 525 kHz** MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	**6 200-6 525 kHz** RESERVED			Not allocated	RESERVED
6 525-6 685 kHz AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
6 685-6 765 kHz AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
6 765-7 000 kHz FIXED	**6 765-7 000 kHz** FIXED	**6 765-7 000 kHz** FIXED	6765 kHz	6795 kHz	ISM	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
MOBILE except aeronautical mobile (R) 5.138 5.138A 5.139	MOBILE except aeronautical mobile (R) 5.138 5.138A	MOBILE except aeronautical mobile (R) 5.138 5.138A				
7 000-7 100 kHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE 5.140 5.141	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE 5.140 5.141				
7 100-7 200 kHz AMATEUR 5.141A 5.141B 5.141C 5.142	**7 100-7 200 kHz** AMATEUR 5.141B 5.141C 5.142	**7 100-7 200 kHz** AMATEUR 5.141B 5.141C 5.142				
7 200-7 300 kHz BROADCASTING	**7 200-7 300 kHz** BROADCASTING	**7 200-7 300 kHz** BROADCASTING			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
7 300-7 400 kHz BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	**7 300-7 400 kHz** BROADCASTING 5.134 5.143 5.143B	**7 300-7 400 kHz** BROADCASTING 5.134 5.143 5.143B			HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.
7 400-7 450 kHz BROADCASTING 5.143B 5.143C	**7 400-7 450 kHz** BROADCASTING 5.143B	**7 400-7 450 kHz** BROADCASTING 5.143B			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
7 450-8 100 kHz FIXED MOBILE except aeronautical mobile (R) 5.143E 5.144	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R) 5.143E	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R) 5.143E				SADC harmonised HF frequencies for cross-border mobile communications
8 100-8 195 kHz FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED				
8 195-8 815 kHz	**8 195-8 815 kHz** MARITIME MOBILE	**8 195-8 815 kHz** RESERVED			Not allocated	RESERVED

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	5.109 5.110 5.132 5.145 5.111					
8 815-8 965 kHz AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
8 965-9 040 kHz AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
9 040-9 305 kHz FIXED	**9 040-9 305 kHz** FIXED	**9 040-9 400 kHz** FIXED				
9 305 -9 355 kHz FIXED Radiolocation 5.145A 5.145B	**9 305 -9 355 kHz** FIXED Radiolocation 5.145A 5.145B					
9355-9 400 KHz FIXED	**9355-9 400 KHz** FIXED					
9400-9500 kHz BROADCASTING 5.134 5.146	**9400-9500 kHz** BROADCASTING 5.134 5.146	**9 400-9 500 kHz** BROADCASTING 5.134 5.146			HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.
9 500-9 900 kHz BROADCASTING 5.147	**9 500-9 900 kHz** BROADCASTING 5.147	**9 500-9 900 kHz** BROADCASTING 5.147			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
9 900-9 995 kHz FIXED	**9 900-9 995 kHz** FIXED	**9 900-9 995 kHz** FIXED				
9 995-10 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	**9 995-10 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	**9 995-10 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111				
10 003-10 005 kHz STANDARD FREQUENCY AND TIME SIGNAL	**10 003-10 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL	**10 003-10 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
Space research 5.111	Space research 5.111	5.111				
10 005-10 100 kHz AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111				Appendix 27 Allotment Plan applies
10 100-10 150 kHz FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur				
10 150-11 175 kHz FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)				SADC harmonised HF frequencies for cross-border mobile communications
11 175-11 275 kHz AERONAUTICAL MOBILE (OR)	**11 175-11 275 kHz** AERONAUTICAL MOBILE (OR)	**11 175-11 275 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
11 275-11 400 kHz AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
11 400-11 600 kHz FIXED	**11 400-11 600 kHz** FIXED	**11 400-11 600 kHz** FIXED				
11 600-11 650 kHz BROADCASTING 5.134 5.146	**11 600-11 650 kHz** BROADCASTING 5.134 5.146	**11 600-11 650 kHz** BROADCASTING 5.134 5.146				Article 12 Planning Procedures and Res.517 apply.
11 650-12 050 kHz BROADCASTING 5.147	**11 650-12 050 kHz** BROADCASTING 5.147	**11 650-12 050 kHz** BROADCASTING 5.147				ITU RR Article 12 Planning Procedures applies
12 050-12 100 kHz BROADCASTING 5.134 5.146	**12 050-12 100 kHz** BROADCASTING 5.134 5.146	**12 050-12 100 kHz** BROADCASTING 5.134 5.146				Article 12 Planning Procedures and Res.517 apply.
12 100-12 230 kHz FIXED	**12 100-12 230 kHz** FIXED	**12 100-12 230 kHz** FIXED				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
12 230-13 200 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**12 230-13 200 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	**12 230-13 200 kHz** RESERVED			Not allocated	RESERVED
13 200-13 260 kHz AERONAUTICAL MOBILE (OR)	**13 200-13 260 kHz** AERONAUTICAL MOBILE (OR)	**13 200-13 260 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
13 260-13 360 kHz AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
13 360-13 410 kHz FIXED RADIO ASTRONOMY 5.149	**13 360-13 410 kHz** FIXED RADIO ASTRONOMY 5.149	**13 360-13 410 kHz** FIXED RADIO ASTRONOMY 5.149				
13 410-13 450 kHz FIXED Mobile except aeronautical mobile (R)	**13 410-13 450 kHz** FIXED Mobile except aeronautical mobile (R)	**13 410-13 570 kHz** FIXED Mobile except aeronautical mobile (R) 5.150	13 553 kHz	13 567 kHz	ISM	
13 450-13 550 KHz FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A 5.149A	**13 450-13 550 KHz** FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A 5.149A					
13 550-13 570 KHz FIXED Mobile except aeronautical mobile (R) 5.150	**13 550-13 570 KHz** FIXED Mobile except aeronautical mobile (R) 5.150					
13 570-13 600 kHz BROADCASTING 5.134 5.151	**13 570-13 600 kHz** BROADCASTING 5.134 5.151	**13 570-13 600 kHz** BROADCASTING 5.134 5.151			HF Sound Broadcasti n	Article 12 Planning Procedures and Res.517 apply.

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
13 600-13 800 kHz BROADCASTING	**13 600-13 800 kHz** BROADCASTING	**13 600-13 800 kHz** BROADCASTING			HF Sound Broadcasti n	Article 12 Planning Procedures applies
13 800-13 870 kHz BROADCASTING 5.134 5.151	**13 800-13 870 kHz** BROADCASTING 5.134 5.151	**13 800-13 870 kHz** BROADCASTING 5.134 5.151			HF Sound Broadcasti n	Article 12 Planning Procedures and Res.517 apply.
13 870-14 000 kHz FIXED Mobile except aeronautical mobile (R)	**13 870-14 000 kHz** FIXED Mobile except aeronautical mobile (R)	**13 870-14 000 kHz** FIXED Mobile except aeronautical mobile (R)				
14 000-14 250 kHz AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE				
14 250-14 350 kHz AMATEUR 5.152	**14 250-14 350 kHz** AMATEUR	**14 250-14 350 kHz** AMATEUR				
14 350-14 990 kHz FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)				SADC harmonised HF frequencies for cross-border mobile communications
14 990-15 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	**14 990-15 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	**14 990-15 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111				
15 005-15 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL				
15 010-15 100 kHz	**15 010-15 100 kHz**	**14 250-14 350 kHz**				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			TO	From		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	AMATEUR				
15 100-15 600 kHz BROADCASTING	**15 100-15 600 kHz** BROADCASTING	**15 010-15 100 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
		15 100-15 600 kHz BROADCASTING			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
15 600-15 800 kHz BROADCASTING 5.134 5.146	**15 600-15 800 kHz** BROADCASTING 5.134 5.146	**15 600-15 800 kHz** BROADCASTING 5.134 5.146			HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			To	From		
15 800-16 100 kHz FIXED 5.153	**15 800-16 100 kHz** FIXED 5.153	**15 800-16 360 kHz** FIXED				
16 100-16 200 KHz FIXED Radiolocation 5.145A 5.145B	**16 100-16 200 KHz** FIXED Radiolocation 5.145A 5.145B					
16 200-16 360 KHz FIXED	**16 200-16 360 KHz** FIXED					
16 360-17 410 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**16 360-17 410 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	**16 360-17 410 kHz** RESERVED			Not allocated	RESERVED
17 410-17 480 kHz FIXED	**17 410-17 480 kHz** FIXED	**17 410-17 480 kHz** FIXED				
17 480-17 550 kHz BROADCASTING 5.134 5.146	**17 480-17 550 kHz** BROADCASTING 5.134 5.146	**17 480-17 550 kHz** BROADCASTING 5.134 5.146			HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.
17 550-17 900 kHz BROADCASTING	**17 550-17 900 kHz** BROADCASTING	**17 550-17 900 kHz** BROADCASTING			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
17 900-17 970 kHz AERONAUTICAL MOBILE (R)	**17 900-17 970 kHz** AERONAUTICAL MOBILE (R)	**17 900-17 970 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies
17 970-18 030 kHz AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)				Appendix 26 Allotment Plan applies
18 030-18 052 kHz FIXED	**18 030-18 052 kHz** FIXED	**18 030-18 052 kHz** FIXED				
18 052-18 068 kHz	**18 052-18 068 kHz**	**18 052-18 068 kHz** FIXED				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Sub-allocation/s			
			Frequency bands		Service	Comments
			To	From		
FIXED Space research	FIXED Space research					
18 068-18 168 kHz AMATEUR AMATEUR-SATELLITE 5.154	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE				
18 168-18 780 kHz FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile			Land mobile	
18 780-18 900 kHz MARITIME MOBILE	**18 780-18 900 kHz** MARITIME MOBILE	**18 780-18 900 kHz** RESERVED			Not allocated	RESERVED
18 900-19 020 kHz BROADCASTING 5.134 5.146	**18 900-19 020 kHz** BROADCASTING 5.134 5.146	**18 900-19 020 kHz** BROADCASTING 5.134 5.146				Article 12 Planning Procedures and Res.517 apply.

19 020-19 680 kHz FIXED	**19 020-19 680 kHz** FIXED	**19 020-19 680 kHz** FIXED				
19 680-19 800 kHz MARITIME MOBILE 5.132	**19 680-19 800 kHz** MARITIME MOBILE 5.132	**19 680-19 800 kHz** RESERVED			Not allocated	RESERVED
19 800-19 990 kHz FIXED	**19 800-19 990 kHz** FIXED	**19 800-19 990 kHz** FIXED				
19 990-19 995 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	**19 990-19 995 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	**19 990-19 995 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111				
19 995-20 010 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	**19 995-20 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	**19 995-20 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111				
20 010-21 000 kHz FIXED Mobile	**20 010-21 000 kHz** FIXED Mobile	**20 010-21 000 kHz** FIXED Land Mobile				
21 000-21 450 kHz AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE				
21 450-21 850 kHz BROADCASTING	**21 450-21 850 kHz** BROADCASTING	**21 450-21 850 kHz** BROADCASTING			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures apply
21 850-21 870 kHz FIXED 5.155A 5.155	**21 850-21 870 kHz** FIXED	**21 850-21 870 kHz** FIXED				
21 870-21 924 kHz FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B				This band is used by the FS for services related to aircraft flight safety (5.155B)
21 924-22 000 kHz AERONAUTICAL MOBILE (R)	**21 924-22 000 kHz** AERONAUTICAL MOBILE (R)	**21 924-22 000 kHz** AERONAUTICAL MOBILE (R)				Appendix 27 Allotment Plan applies

22 000-22 855 kHz MARITIME MOBILE 5.132 5.156	**22 000-22 855 kHz** MARITIME MOBILE 5.132	**22 000-22 855 kHz** RESERVED				RESERVED
22 855-23 000 kHz FIXED 5.156	**22 855-23 000 kHz** FIXED	**22 855-23 000 kHz** FIXED				
23 000-23 200 kHz FIXED Mobile except aeronautical mobile (R) 5.156	**23 000-23 200 kHz** FIXED Mobile except aeronautical mobile (R)	**23 000-23 200 kHz** FIXED Mobile except aeronautical mobile (R)				

23 200-23 350 kHz FIXED 5.156A AERONAUTICAL MOBIL (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)				The use of this band by the FS is limited to the provision of services related to aircraft flight safety (5.156A)
23 350-24 000 kHz FIXED MOBILE except aeronautical mobile 5.157	**23 350-24 000 kHz** FIXED MOBILE except aeronautical mobile 5.157	**23 350-24 000 kHz** FIXED MOBILE except aeronautical mobile 5.157				
24 000-24 450 kHz FIXED LAND MOBILE	**24 000-24 450 kHz** FIXED LAND MOBILE	**24 000-24 890 kHz** FIXED LAND MOBILE				
24 450 -24 600 kHz FIXED LAND MOBILE Radiolocation 5.132A 5.158	**24 450 -24 600 kHz** FIXED LAND MOBILE Radiolocation 5.132A 5.158					
24 600-24 890 KHz FIXED LAND MOBILE	**24 600-24 890 KHz** FIXED LAND MOBILE					
24 890-24 990 kHz AMATEUR AMATEUR-SATELLITE	**24 890-24 990 kHz** AMATEUR AMATEUR-SATELLITE	**24 890-24 990 kHz** AMATEUR AMATEUR-SATELLITE				
24 990-25 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	**24 990-25 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	**24 990-25 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)				
25 005-25 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research				
25 010-25 070 kHz FIXED MOBILE except aeronautical mobile	**25 010-25 070 kHz** FIXED MOBILE except aeronautical mobile	**25 010-25 070 kHz** FIXED MOBILE except aeronautical mobile				
25 070-25 210 kHz	**25 070-25 210 kHz**	**25 070-25 210 kHz**				EIRP should not exceed 50W

MARITIME MOBILE	MARITIME MOBILE	LAND MOBILE				
25 210-25 550 kHz FIXED MOBILE except aeronautical mobile	**25 210-25 550 kHz** FIXED MOBILE except aeronautical mobile	**25 210-25 550 kHz** FIXED MOBILE except aeronautical mobile				
25 550-25 670 kHz RADIO ASTRONOMY 5.149	**25 550-25 670 kHz** RADIO ASTRONOMY 5.149	**25 550-25 670 kHz** RADIO ASTRONOMY 5.149				
25 670-26 100 kHz BROADCASTING	**25 670-26 100 kHz** BROADCASTING	**25 670-26 100 kHz** BROADCASTING			HF Sound Broadcasting	ITU RR Article 12 Planning Procedures apply.
26 100-26 175 kHz MARITIME MOBILE 5.132	**26 100-26 175 kHz** MARITIME MOBILE 5.132	**26 100-26 175 kHz** RESERVED				RESERVED
26 175-26200 kHz FIXED MOBILE except aeronautical mobile	**26 175-2 620 kHz** MOBILE except aeronautical mobile	**26 175-27 500 kHz** MOBILE except aeronautical mobile 5.150 SADC1	26.175 MHz 26.957 MHz 27.275 MHz	26.957 MHz 27.283 MHz 27.500 MHz	Single frequencies ISM Single frequencies	Mobile systems (single frequencies) ISM applications (Common international SRD band) Mobile systems (single frequencies)
26 200-26 350 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	**26 200-26 350 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A					

26 350-27 500 kHz FIXED MOBILE except aeronautical mobile 5.150	**26 350-27 500 kHz** FIXED MOBILE except aeronautical mobile 5.150 SADC1					
27.5-28 MHz METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE				
28-29.7 MHz AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE				
29.7-30.005 MHz FIXED MOBILE	**29.7-30.005 MHz** FIXED MOBILE SADC2	**29.7-30.005 MHz** FIXED MOBILE SADC2	29.700 MHz	30.005 MHz	Single frequencies	Government use
30.005-30.01 MHz SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	**30.005-30.01 MHz** SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	**30.005-30.01 MHz** FIXED MOBILE				Government use
30.01-37.5 MHz FIXED MOBILE	**30.01-37.5 MHz** MOBILE	**30.01-37.5 MHz** MOBILE	**30.01-37.5 MHz** MOBILE	30.010 MHz 32.000 MHz	32.000 MHz 32.3250 MHz	No sub-allocation Mobile (Single frequencies)

				32.3250 MHz	33.6750 MHz	Mobile (Dual frequencies)
				33.6750 MHz	34.1750 MHz	Mobile (Single frequencies)
				34.1750 MHz	34.210 MHz	Mobile (dual frequencies)
				34.210 MHz	34.250 MHz	Single frequencies
				34.250 MHz	34.565 MHz	Dual frequencies
				34.565 MHz	35.000 MHz	Dual frequencies
				35.000 MHz	35.500 MHz	Single frequencies
				35.500 MHz	36.825 MHz	Dual frequencies

				36.825 MHz	37.500 MHz	Single frequencies
37.5-38.25 MHz FIXED MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** MOBILE 5.149	37.5 MHz 38.23 MHz	38.230 MHz 38.250 MHz	Single frequencies Radio astronomy
38.25-39 MHz FIXED MOBILE	**38.25-39 MHz** MOBILE	**38.25-39.986 MHz** MOBILE	38.250 MHz 38.500 MHz 39.825 MHz	38.500 MHz 39.825 MHz 39.986 MHz	Single frequencies Dual frequencies Single frequencies	
39-39.5 MHz FIXED MOBILE Radiolocation 5.132A 5.159	**39-39.5 MHz** FIXED MOBILE Radiolocation 5.132A 5.159					
39.5-39.986 MHz FIXED MOBILE	**39.5-39.986 MHz** FIXED MOBILE					
39.986-40.02 MHz FIXED MOBILE Space research	**39.986-40.02 MHz** FIXED MOBILE	**39.986-40.02 MHz** MOBILE	39.986 MHz	40.02 MHz	Single frequencies	
40.02-40.98 MHz FIXED MOBILE 5.150	**40.02-40.98 MHz** MOBILE 5.150 SADC3	**40.02-40.98 MHz** MOBILE 5.150 SADC3	40.02 MHz 40.624 MHz 40.66 MHz	40.625 MHz 40.66 MHz 40.70 MHz	Single frequencies Dual frequencies ISM	Mobile systems (single frequencies) Paired with 34.175 – 34.21 (Common international SRD band; see ITU-R Rec.SM.215) Paired with 34.25 – 34.53

			40.70 MHz	40.98 MHz	Dual frequencies	
40.98-41.015 MHz FIXED MOBILE Space research 5.160 5.161	**40.98-41.015 MHz** MOBILE Space research 5.160	**40.98-41.015 MHz** MOBILE AERONAUTICAL RADIONAVIGATION Space research 5.160	40.98 MHz	41.015 MHz	Dual frequencies	Paired with 34.53 – 34.565
41.015-42MHz FIXED MOBILE 5.160 5.161	**41.015-42 MHz** MOBILE 5.160	**41.015-44 MHz** MOBILE AERONAUTICAL RADIONAVIGATION 5.160	41.015 MHz 41.450 MHz 41.650 MHz 43.00 MHz	41.450 MHz 41.650 MHz 43.00 MHz 44.00 MHz	Mobile (Dual frequencies) Mobile (Single frequencies) Mobile (dual frequencies) No sub-allocation	Paired with 34.565- 35 Paired with 32.235 – 33.675
42-42.5 MHz FIXED MOBILE Radiolocation 5.132A 5.160 5.161B	**42-42.5 MHz** FIXED MOBILE Radiolocation 5.132A 5.160 5.161B					
42.5-44 MHz FIXED MOBILE 5.160 5.161 5.161B	**42.5-44 MHz** FIXED MOBILE 5.160 5.161 5.161B					
44-47 MHz FIXED MOBILE 5.162 5.162A	**44-47 MHz** FIXED MOBILE	**44-47 MHz** FIXED MOBILE	44.00 MHz 45.30 MHz	45.30 MHz	No sub-allocation	Paired with 47.5 – 49.1

			46.61MHz	46.90 MHz 46.97 MHz	Meteor Burst CTO cordless telephony	Paired with 49.67-49.97
47-50 MHz BROADCASTING 5.162A 5.163 5.164 5.165	**47-50 MHz** LAND MOBILE 5.164 5.165	**47-50 MHz** LAND MOBILE 5.1645.165	**47-50 MHz** LAND MOBILE 5.164 5.165	47.5 MHz 49.67 MHz	49.1 MHz 49.97 MHz	Meteor Burst CT0 Cordless Telephony
50-52 MHz BROADCASTING Amateur 5.166A 5.166B 5.166C 5.166D 5.166E 5.169 5.169A 5.162A 5.164 5.165	**50-54 MHz** AMATEUR 5.166A 5.166C 5.169 5.169*A* 5.164 5.165	**50-54 MHz** AMATEUR 5.164 5.165 5.169				
52-68 MHz BROADCASTING 5.162A 5.163 5.164 5.165 5.169 5.169A 5.169B 5.171	**54-68 MHz** FIXED MOBILE except aeronautical mobile 5.164 5.165 5.171	**54-68 MHz** MOBILE except aeronautical mobile 5.164 5.165 5.171	54.00 MHz 54.325 MHz 55.450 MHz 56.850 MHz 58.50 MHz	54.325 MHz 55.450 MHz 56.850 MHz 58.50 MHz 60.025 MHz	Mobile (Single frequencies) No sub-allocation Mobile (dual frequencies) Mobile (Single	Paired with 58.5 – 59.9 Paired with 54.45- 55.45

					frequencies) Mobile (dual frequencies)	
68-74.8 MHz FIXED MOBILE except aeronautical mobile 5.149 5.175 5.177 5.179	**68-74.8 MHz** MOBILE except aeronautical mobile 5.149 SADC4	**68-74.8 MHz** MOBILE except aeronautical mobile 5.149 SADC4	68.00 MHz 69.25 MHz 70.00 MHz 70.30 MHz 70.975 MHz 71.475 MHz 72.525 MHz 73.425 MHz	69.25 MHz 70.00 MHz 70.30 MHz 70.975 MHz 71.475 MHz 72.525 MHz 73.425 MHz 74.800 MHz	Mobile (Single frequencies) Mobile (Dual frequencies) Mobile (Dual frequencies) Mobile (Dual frequencies) Fire fighting (Single frequencies) Mobile (dual	Paired with 76.175 – 76.925 Paired with 75.20 - 75.50 Paired with 75.50 -76.925 Allocated for fire fighting use Paired with 76.925 – 77.975 Paired with 78.625 – 80.00 PMR and/ PAMR

					frequencies) Mobile (Single frequencies) Mobile (dual frequencies)	
74.8-75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180				Instrument Landing System (ILS) Marker beacons (75 MHz)
75.2-87.5 MHz FIXED MOBILE except aeronautical mobile 5.175 5.179 5.187	**75.2-87.5 MHz** MOBILE except aeronautical mobile	**75.2-87.5 MHz** MOBILE except aeronautical mobile	75.200 MHz 75.500 MHz 76.175 MHz 76.925 MHz 77.975 MHz 78.625 MHz 80.000 MHz 80.500 MHz 81.000 MHz 81.625 MHz	75.500 MHz 76.175 MHz 76.925 MHz 77.975 MHz 78.625 MHz 80.000 MHz 80.500 MHz	Mobile (dual frequencies) Mobile (dual frequencies) Mobile (dual frequencies) Mobile (dual frequencies)	Paired with 70.00 – 70.30 Paired with 70.30 – 70.975 Paired with 69.25 – 70.00 Paired with 71.475 – 72.525 Paired with 82.975 – 83.625 Paired with 73.425 – 74.800 Paired with 87.00 – 87.500 Paired with 86.375 – 87.000 Paired with 85.025 – 86.375

			82.975 MHz 83.625 MHz 85.025 MHz 86.375 MHz 87.000 MHz	81.000 MHz 81.625 MHz 82.975 MHz 83.625 MHz 85.025 MHz 86.375 MHz 87.000 MHz 87.500 MHz	Mobile (dual frequencies) Mobile (dual frequencies) Mobile (dual frequencies) Mobile (single frequencies) Mobile/alarm (dual frequencies) Mobile (dual frequencies) Mobile (dual frequencies) Mobile (single frequencies)	Paired with 77.975 – 78.625 Paired with 81.625 – 82.975 Paired with 81.000 – 81.625 Paired with 80.000 – 80.500

					Mobile (dual frequencies) Mobile/alarm (dual frequencies) Mobile (dual frequencies)	
87.5-100 MHz BROADCASTING 5.190	**87.5-100 MHz** BROADCASTING	**87.5-100 MHz** BROADCASTING	**87.5-100 MHz** BROADCASTING			Geneva agreement GE84
100-108 MHz BROADCASTING 5.192 5.194	**100-108 MHz** BROADCASTING	**100-108 MHz** BROADCASTING	**100-108 MHz** BROADCASTING			
108-117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	**108-117.975 MHz** AERONAUTICAL RADIONAVIGATION 5.197A	**108-117.975 MHz** AERONAUTICAL RADIONAVIGATION 5.197A	108.00 MHz 112.00 MHz	112.00 MHz 117.975 MHz	Instrument Landing System (ILS) / Localiser VHF Omni-directional Range (VOR)	Aeronautical mobile communications AM(R)S shall operate in accordance with Res.413(Rev.WRC-07). Safety and regularity of flights; in the band 108-112 MHz AM(R)S limited to ground based transmitters.

117.975-137 MHz AERONAUTICAL MOBILE (R) 5.111 5.200 5.201 5.202	**117.975-137 MHz** AERONAUTICAL MOBILE (R) 5.111 5.200 5.201	**117.975-137 MHz** AERONAUTICAL MOBILE (R) 5.111 5.200 5.201				International Distress Frequency (121.5 MHz) ITU RR Article 31 applies 123.1 MHz - auxiliary emergency frequency
137-137.025 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137-137.025 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R) 5.208	**137-137.025 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R) 5.208				
137.025-137.175 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208				

137.175-137.825 MHz SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137.175-137.825 MHz** SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R) 5.208	**137.175-137.825 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R) 5.208				
137.825-138 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208				
138-143.6 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**138-143.6 MHz** MOBILE 5.211 5.212 5.214 SADC5	**138-143.6 MHz** FIXED MOBILE 5.211 5.212 5.214 SADC5	138.000 MHz 140.100 MHz	140.100 MHz 140.500 MHz	Mobile (dual frequencies) Mobile (dual	Paired with 141.5 – 143.6 Paired with 143.6 – 144.00 Can be paired with 152.05 – 152.5, single frequencies also allowed

			140.500 MHz 141.000 MHz 141.500 MHz	141.000 MHz 141.500 MHz 143.600 MHz	frequencies) Alarms Mobile (single frequencies) Mobile (dual frequencies)	Paired with 138.0 – 140.10
143.6-143.65 MHz AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	**143.6-143.65 MHz** MOBILE 5.211 5.212 5.214	**143.6-143.65 MHz** FIXED MOBILE 5.211 5.212 5.214	143.60 MHz	144 MHz	Mobile (dual frequencies)	Paired with 140.1 – 140.60
143.65-144 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**143.65-144 MHz** MOBILE 5.211 5.212 5.214	**143.65-144 MHz** FIXED MOBILE 5.211 5.212 5.214				PMR and PAMR
144-146 MHz AMATEUR AMATEUR-SATELLITE 5.216	**144-146 MHz** AMATEUR AMATEUR-SATELLITE	**144-146 MHz** AMATEUR AMATEUR-SATELLITE				
146-148 MHz FIXED MOBILE except aeronautical mobile (R)	**146-148 MHz** MOBILE except aeronautical mobile (R)	**146-148 MHz** MOBILE except aeronautical mobile (R)	146.00 MHz	148.00 MHz	Mobile (dual frequencies)	Paired with 154.0 – 156.00

148-149.9 MHz FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221	**148-149.9 MHz** MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221 SADC6	**148-149.9 MHz** MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221 SADC6				Mobile satellite communications limited to non-geostationary satellites
149.9-150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	**149.9-150.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	**149.9-150.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223				Mobile satellite communications limited to non-geostationary satellites
150.05-153 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	**150.05-153 MHz** MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	**150.05-153 MHz** MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	150.05 MHz 151.00 MHz 152.05 MHz 152.50 MHz	151.00 MHz 152.05 MHz 152.50 MHz 153.00 MHz	Paging systems No sub-allocation Alarms Mobile (single frequencies)	Paired with 140.5 – 141.00, single frequencies may be allowed.
153-154 MHz FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	**153-154 MHz** MOBILE except aeronautical mobile (R)	**153-154 MHz** MOBILE except aeronautical mobile (R)	**153-154 MHz** MOBILE except aeronautical mobile (R)	153.00 MHz 153.05 MHz	153.05 MHz 154.00 MHz	Mobile (single frequencies) Mobile (dual frequencies)

154-156.4875 MHz FIXED MOBILE except aeronautical mobile (R) 5.225A 5.226	**154-156.4875 MHz** FIXED MOBILE except aeronautical mobile (R) 5.225A 5.226	**154-156.4875 MHz** MOBILE except aeronautical mobile (R) 5.226	154.00 MHz 156.00 MHz	156.00 MHz 156.4875 MHz	Mobile (dual frequencies) Mobile (single frequencies)	Paired with 146.00 – 148.00
156.4875-156.5625 MHz MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	**156.4875-156.5625 MHz** MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	**156.4875-156.5625 MHz** MARITIME MOBILE (distress and calling via DSC)				RESERVED
156.5625-156.7625 MHz FIXED MOBILE except aeronautical mobile (R) 5.226	**156.5625-156.7625 MHz** MOBILE except aeronautical mobile (R) 5.226	**156.5625-156.7625 MHz** MOBILE except aeronautical mobile (R) 5.226				Single frequency applications, ITU RR Articles 31 and 52 and Appendix 18 apply.
156.7625-156.7875 MHz MARITIME MOBILE(earth to space) (5.111 5.226 5.228	**156.7625-156.8375 MHz** MARITIME MOBILE (earth to space) (5.111 5.226 5.228	**156.7625-156.8375 MHz** MARITIME MOBILE (distress and calling) 5.111 5.226				RESERVED
156.7875-156.8125 MHz MARITIME MOBILE (distress and calling) 5.111 5.226	**156.7875-156.8125 MHz** MARITIME MOBILE (distress and calling) 5.111 5.226					
156.8125-156.8375 MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	**156.8125-156.8375** MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228					
156.8375-157.1875 MHz FIXED MOBILE except aeronautical mobile 5.226	**156.8375-157.1875 MHz** FIXED MOBILE except aeronautical mobile 5.226	156.8375-174 MHz MOBILE except aeronautical mobile 5.226 5.227A SADC7	156.8375 MHz	157.950 MHz	Mobile (single frequencies)	Previously part of the band was used for Maritime

157.1875-157.3375 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	**157.1875-157.3375 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite MOD 5.208A 5.208B 5.228AB 5.228AC 5.226		157.950 MHz	160.60 MHz	Mobile (dual frequencies)	Paired with 162.55 – 165.2
157.3375-161.7875 MHz FIXED MOBILE except aeronautical mobile 5.226	**157.3375-161.7875 MHz** FIXED MOBILE except aeronautical mobile 5.226		160.60 MHz	161.475	Single frequencies	
161.7875-161.9375 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	**161.7875-161.9375 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226		161.475 MHz	162.05 MHz	Automatic Identification System (AIS)	ITU RR Articles 31 and 52 and Appendix 18 apply.
161.9375-161.9625 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	**161.9375-161.9625 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226		162.050 MHz 169.400 MHz 169.800 MHz	169.400 MHz 169.800 MHz 174.000 MHz	Mobile (single frequencies) Paging systems Mobile (single frequencies)	
161.9625-161.9875 FIXED MOBILE except aeronautical mobile	**161.9625-161.9875** FIXED MOBILE except aeronautical mobile					

Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B					
161.9875-162.0125 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229	**161.9875-162.0125** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229					
162.0125-162.0375 FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ADD 5.F110 5.226 5.229 ADD 5.A110 ADD 5.B110	**162.0125-162.0375** FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) ADD 5.F110 5.226 5.229 ADD 5.A110 ADD 5.F110 ADD 5.B110					
162.0375-174 FIXED MOBILE except aeronautical mobile 5.226 5.229	**162.0375-174** FIXED MOBILE except aeronautical mobile 5.226 5.229 SADC7					
174-223 MHz BROADCASTING 5.235 5.237 5.243	**174-223 MHz** BROADCASTING 5.237	TV Broadcasting (174-214 MHz) T-DAB (214-230 MHz)	**174-223 MHz** BROADCASTING 5.237	174 MHz 214 MHz	214 MHz 230 MHz	TV Broadcasting T-DAB

223-230 MHz BROADCASTING Fixed Mobile 5.243 5.246 5.247	**223-230 MHz** BROADCASTING	**223-230 MHz** BROADCASTING	214 MHz	230 MHz	T-DAB	Migration from analogue to digital in accordance with SADC time lines.
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-235 MHz** BROADCASTING 5.252 SADC8	**230-235 MHz** BROADCASTING 5.252 SADC8	214 MHz	230 MHz	T-DAB	Migration from analogue to digital in accordance with SADC time lines.
235-267 MHz FIXED MOBILE	**235-238 MHz** BROADCASTING 5.2525.254 SADC9	**235-238 MHz** BROADCASTING 5.252 5.254 SADC9			TV Broadca sting	TV Band III (Analogue television to migrate according to GE-06 and SADC time lines)
	238-246 MHz MOBILE 5.111 5.254 5.256 SADC9	**238-246 MHz** MOBILE 5.111 5.254 5.256 SADC9 242.95-243.05 MHz International Distress Frequency (243 MHz) 243.05-246.00 MHz Low-power devices	**238-246 MHz** MOBILE 5.111 5.254 5.256 SADC9	238 MHz 242.95 MHz 243.05 MHz	242.95 MHz 243.05 MHz 246.00 MHz	PMR and PAMR International Distress Frequency (243 MHz)
	246-254 MHz BROADCASTING 5.252 5.254 SADC9	**246-254 MHz** BROADCASTING 5.252 5.254 SADC9	246.18 MHz	254.18 MHz	TV Broadcasti ng	TV Band III (Analogue television to migrate according to GE-06 and SADC time lines)
5.111 5.252 5.254 5.256 5.256A	**254-267 MHz** MOBILE 5.254 SADC9	**254-267 MHz** MOBILE 5.254 SADC9			PMR and PAMR	
267-272 MHz FIXED MOBILE	**267-272 MHz** FIXED MOBILE	**267-272 MHz** FIXED MOBILE			Governme nt use	

Space operation (space-to-Earth) 5.2545.257	5.2545.257	5.254 5.257				
272-273 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	**272-273 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	**272-273 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254			Government use	
273-312 MHz FIXED MOBILE 5.254	**273-312 MHz** FIXED MOBILE 5.254	**273-312 MHz** FIXED MOBILE 5.254			Government use	
312-315 MHz FIXED MOBILE Mobile-satellite (Earth-to-space) 5.2545.255	**312-315 MHz** FIXED MOBILE 5.2545.255	**312-315 MHz** FIXED MOBILE 5.2545.255	**312-315 MHz** FIXED MOBILE 5.254 5.255			Government use
315-322 MHz FIXED MOBILE 5.254	**315-322 MHz** FIXED MOBILE 5.254	**315-322 MHz** FIXED MOBILE 5.254	**315-322 MHz** FIXED MOBILE 5.254			Government use
322-328.6 MHz FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149			Government use
328.6-335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258			Instrument Landing Systems	

5.259					(ILS) (glide path)	
335.4-387 MHz FIXED MOBILE 5.254	**335.4-387 MHz** FIXED MOBILE 5.254	**335.4-387 MHz** FIXED MOBILE 5.254	335.4 MHz	336 MHz	PMR and PAMR	
			336 MHz	346 MHz	PTP/PTMP rural system (FWA)	Paired with 356-366 MHz
			346.0 MHz	356.0 MHz	PMR and PAMR	
			356.0 MHz	366.0 MHz	PTP/PTMP rural system (FWA)	Paired with 336-346 MHz
			366.0 MHz	380.0 MHz	PMR and PAMR	
			380.0 MHz	387.0 MHz	PPDR	Paired with 390.0-397.0 MHz (To be used mainly for digital systems).
387-390 MHz FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	**387-390 MHz** MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255 SADC10	387.0-390.0 MHz PMR and/or PAMR				Paired with 397.0-399.9 MHz To be used mainly for digital systems.
390-399.9 MHz FIXED MOBILE 5.254	**390-399.9 MHz** MOBILE 5.254 SADC10	390.0-397.0 MHz PPDR	.			Paired with 380.0-387.0 MHz To be used mainly for digital systems
		397.0-399.9 MHz PMR and/or PAMR				Paired with 387.0-390.0 MHz To be used mainly for digital systems.
399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	**399.9-400.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	**399.9-400.05 MHz** MOBILE-SATELLITE (Earth-to-space)) 5.209 5.224A220 5.260A 5.260B5			Mobile satellite communications	
400.05-400.15 MHz	**400.05-400.15 MHz**	**400.05-400.15 MHz**				

STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262				
400.15-401 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	**400.15-401 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 5.262 5.264	400.15-401 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 5.262 5.264				

401-402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	**401-402 MHz** METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) 5.264A 5.264B	401-402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space)				
402-403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	**402-403 MHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) ADD 5.C12 ADD 5.D12	**402-403 MHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space)			SRDs	SRDs – see ITU-R Rec. SM.2153 and Rec. RS.1346 – ultra low power active medical implants
403-406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	**403-406 MHz** METEOROLOGICAL AIDS	**403-406 MHz** METEOROLOGICAL AIDS				
406-406.1 MHz MOBILE-SATELLITE (Earth-to-space) 5.266 5.267 5.265	**406-406.1 MHz** MOBILE-SATELLITE (Earth-to-space) 5.266 5.267 5.265	**406-406.1 MHz** MOBILE-SATELLITE (Earth-to-space) 5.266 5.267			Low power satellite EPIRBs	(distress and safety purposes) ITU RR Articles 32 and 34 and Appendix 15 applies

406.1-410 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	**406.1-410 MHz** MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	**406.1-410 MHz** MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149			PMR and PAMR PPDR	The use of this band for PPDR to be studied
410-420 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268 5.268	**410-420 MHz** MOBILE except aeronautical mobile SADC11	**410-420 MHz** FIXED MOBILE except aeronautical mobile AMATEUR SADC11			PMR and/or PAMR PPDR	The use of this band for PPDR to be studied
420-430 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	**420-430 MHz** MOBILE except aeronautical mobile SADC11	**420-430 MHz** FIXED MOBILE except aeronautical mobile AMATEUR SADC11			PMR and/or PAMR PPDR	The use of this band for PPDR to be studied
430-432 MHz AMATEUR RADIOLOCATION 5.271 5.272 5.273 5.274 5.275 5.276 5.277	**430-432 MHz** AMATEUR RADIOLOCATION 5.276 5.277 SADC11	**430-432 MHz** FIXED AMATEUR MOBILE except aeronautical mobile RADIOLOCATION 5.276 5.277 SADC11				
432-438 MHz AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 5.272 5.276 5.277 5.280 5.281 5.282	**432-438 MHz** AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.276 5.277 5.282 SADC11	**432-438 MHz** AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.276 5.277 5.282	432 MHz 435 MHz 433.0 MHz	438 MHz 438 MHz 434.79 MHz	Amateur Amateur-satellite ISM	

		SADC11				
438-440 MHz AMATEUR RADIOLOCATION 5.271 5.273 5.274 5.275 5.276 5.277 5.283	**438-440 MHz** AMATEUR RADIOLOCATION 5.276 5.277	**438-440 MHz** AMATEUR RADIOLOCATION 5.276 5.277				
440-450 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	**440-450 MHz** FIXED MOBILE except aeronautical mobile 5.286	PMR and/or PAMR PPDR PMR446 (446-446.1 MHz) FIXED (telemetry, dual frequency alarm systems)	**440-450 MHz** FIXED MOBILE except aeronautical mobile 5.286			PMR and PAMR FIXED
450-455 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	**450-455 MHz** FIXED MOBILE 5.286AA 5.286 5.286A	**450-455 MHz** FIXED MOBILE 5.286AA 5.286 5.286A				This band is currently used for a variety of fixed and mobile systems in the various SADC countries. This band is also identified for IMT (Res.224 applies).
455-456 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	**455-456 MHz** FIXED MOBILE 5.286AA 5.2095.286A	**455-456 MHz** FIXED MOBILE 5.286AA 5.209 5.286A				
456-459 MHz FIXED	**456-459 MHz** FIXED	**456-459 MHz** FIXED				

MOBILE 5.286AA 5.271 5.287 5.288	MOBILE 5.286AA 5.287 5.288	MOBILE 5.286AA 5.287				
459-460 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	**459-460 MHz** FIXED MOBILE 5.286AA 5.209 5.286A	**459-460 MHz** FIXED MOBILE 5.286AA 5.209 5.286A				
460-470 MHz FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) MOD 5.287 5.288 5.289 5.290	**460-470 MHz** FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) MOD 5.287 5.289	**460-470 MHz** FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) 5.287 5.289				
470-694 MHz **BROADCASTING** 5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312	**470-694 MHz** **BROADCASTING** **5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312**	**470-694 MHz** **BROADCASTING** **5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312**	DTT broadcasting (470-694 MHz)			Band IV/V Analogue television to migrate to digital television in line with SADC time lines
694-790 MHz MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING 5.300 5.312	**694-790 MHz** MOBILE except aeronautical mobile 5.312A 5.317A 5.300 5.312	**694-790 MHz** MOBILE except aeronautical mobile 5.312A 5.317A 5.300 5.312				IMT Radio Frequency Channel arrangement according to ITU-R M.1036
790-862 MHz FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.312 5.319	**790-862 MHz** MOBILE except aeronautical mobile 5.316B 5.317A SADC13	**790-862 MHz** MOBILE except Aeronautical mobile 5.316B 5.317A SADC13				Res. 224 (REV. WRC-19) applies IMT Radio Frequency Channel arrangement according to ITU-R M.1036
862-890 MHz	**862-890 MHz**	**862-890 MHz**	862	876		IMT paired with 824 – 849

FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.319 5.323	MOBILE except aeronautical mobile 5.317A 5.322 SADC14	MOBILE except aeronautical mobile 5.317A **5.322 SADC14**	876	880		IMT PMR and/or PAMR paired with 921 – 925
			880	915		IMT paired with 925 – 960
890-942 MHz FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation 5.323	**890-942 MHz** MOBILE except aeronautical mobile 5.317A	**890-942 MHz** MOBILE except aeronautical mobile 5.317A				915-921 MHz PMR and/or PMR
			921 925	925 960		Paired with 876-880 MHz. Paired with 880-915 MHz
942-960 MHz FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	**942-960 MHz** MOBILE except aeronautical mobile 5.317A 5.322	**942-960 MHz** MOBILE except aeronautical mobile 5.317A 5.322				
960-1 164 MHz AERONAUTICAL RADIONAVIGATION 5.328 5.328AA AERONAUTICAL MOBILE (R) 5.327A	**960-1 164 MHz** AERONAUTICAL RADIONAVIGATION 5.328 5.328AA AERONAUTICAL MOBILE (R) 5.327A	**960-1 164 MHz** AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A			Distance measuring equipment Secondary surveillance radar	
1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	**1 164-1 215 MHz** AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	**1 164-1 215 MHz** AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B			Distance measuring equipment Secondary surveillance radar	

		5.328A				
1 215-1 240 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	**1 215-1 240 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	**1 215-1 240 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	1215 MHz	1225 MHz	Low power movement detectors / GPS L2	
			1225 MHz	1240 MHz	GPS L2	
1 240-1 300 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A	**1 240-1 300 MHz** 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 5.282 5.332 5.335A	**1 240-1 300 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335A			Air traffic Control Radar /Amateur	Amateur on secondary basis
1 300-1 350 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space)	**1 300-1 350 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space)	**1 300-1 350 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION			Air traffic Control Radar	

5.149 5.337A	5.149 5.337A	RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A				
1 350-1 400 MHz FIXED MOBILE RADIOLOCATION 5.149 5.3385.338A 5.339	**1 350-1 400 MHz** FIXED RADIOLOCATION 5.149 5.338A 5.339	**1 350-1 400 MHz** FIXED RADIOLOCATION 5.149 5.338A 5.339	1 350 MHz	1 375 MHz	Fixed links (dual frequency)	Paired with 1492 – 1517 MHz
			1 375 MHz	1 400 MHz	Fixed links (dual frequency)	Paired with 1427-1452 MHz
1 400-1 427 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**1 400-1 427 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**1 400-1 427 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341				
1 427-1 429 MHz SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 5.342	**1 427-1 429 MHz** SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341	**1 427-1 429 MHz** SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341	1 427 MHz	1 452 MHz	Fixed links (dual frequency	Paired with 1375-1400 MHz; CEPT T/R 13-01 refers
1 429-1 452 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 5.342	**1 429-1 452 MHz** FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341	**1 429-1 452 MHz** FIXED MOBILE except aeronautical mobile 5.338A 5.341				

1 452-1 492 MHz FIXED MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.342 5.345	**1 452-1 492 MHz** FIXED MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345	**452-1 492 MHz** MOBILE except aeronautical mobile BROADCASTING 5.345 BROADCASTING-SATELLITE 5.208B 5.345 5.341	1 452MHz	1 467 MHz	Terrestrial Digital Audio Broadcasting (T-DAB)	allocated for T-DAB in Region 1 IMT Res. 223 (Rev.WRC-15
			1 467 MHz	1 492 MHz	Satellite Digital Audio Broadcasting (S-DAB)	allocated for T-DAB in Region 1 IMT Res. 223 (Rev.WRC-15
1 492-1 518 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.341 5.342	**1 492-1 518 MHz** FIXED MOBILE except aeronautical mobile 5.341A 5.341 SADC15	**1 492-1 518 MHz** FIXED 5.341 SADC15 1 517-1 518 MHz Fixed links (single frequency) IMT Res. 223 (Rev.WRC-15)	1 492 MHz	1 517 MHz	Fixed links (dual frequency)	Paired with 1350-1375 MHz
			1 517 MHz	1 518 MHz	Fixed links (single frequency)	
1 518-1 525 MHz 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 MHz** FIXED MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	**1 518-1 525 MHz** FIXED MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	1518 MHz	1 525 MHz	Fixed links (single frequency)	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.

1 525-1 530 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 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 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.354 5.352A	**1 525-1 530 MHz** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.354 5.352A				The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.
1 530-1 535 MHz SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	**1 530-1 535 MHz** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A 5.341 5.351 5.354	**1 530-1 535 MHz** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A 5.341 5.351 5.354				The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.
1 535-1 559 MHz MOBILE-SATELLITE (space-to-Earth) 5.208B 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 MHz** MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A 5.359	**1 535-1 559 MHz** MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A 5.359				The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.
1 559-1 610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A	**1 559-1 610 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A	**1 559-1 610 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-	1559 MHz	1593 MHz	GPS	
			1593 MHz	1594 MHz	Aeronautical public correspondence	Paired with 1625.5 to 1626.5 MHz

5.341 5.362B 5.362C	5.341 5.362B	space) 5.208B 5.328B 5.329A 5.341 5.362B	1594 MHz	1610 MHz	GPS	
1 610-1 610.6 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372			MSS	The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2483.5-2484.1 MHz for some systems.
1 610.6-1 613.8 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610.6-1 613.8 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610.6-1 613.8 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372			MSS	The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2484.1-2487.3 MHz for some systems.
1 613.8-1 621.35 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 613.8-1 621.35 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 613.8-1 626.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1613.8 MHz	1625.5 MHz	MSS	
			1625.5 MHz	1626.5 MHz	aeronautical public correspondence	Paired with 1593-1594 MHz

1621.35-1626.5 MHz MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1621.35-1626.5 MHz** MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) 5.208B 5.341 5.355 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1621.35-1626.5 MHz** MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-tospace) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) 5.208B 5.341 5.355 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372				The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2484.1-2487.3 MHz for some systems.
1 626.5-1 660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	**1 626.5-1 660 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	**1 626.5-1 660 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A <u>5.359</u> 5.374 5.375 5.376	1626.5	1645.5 MHz	Maritime mobile satellite	In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.
			1645.5 MHz	1646.5 MHz	Mobile satellite	
			1646.5 MHz	1656.5 MHz	Aeronautical mobile satellite	
			1656.5 MHz	1660 MHz	No sub-allocation	
1 660-1 660.5 MHz 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 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	**1 660-1 660.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A				

1 660.5-1 668 MHz RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	**1 660.5-1 668 MHz** RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.341 5.379A	**1 660.5-1 668 MHz** RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.341 5.379A				
1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	**1 668-1 668.4 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.341 5.379 5.379A	**1 668-1 668.4 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.341 5.379 5.379A				The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.
1 668.4-1 670 MHz 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 MHz** 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 MHz** 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				The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.
1 670-1 675 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B	**1 670-1 675 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B	**1 670-1 675 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE				The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.

5.341 5.379D 5.379E 5.380A	5.341 5.379D 5.379E 5.380A	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A				
1 675-1 690 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	**1 675-1 690 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	**1 675-1 690 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341				
1 690-1 700 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382				
1 700-1 710 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341			Single frequency fixed links	
1 710-1 930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	**1 710-1 930 MHz** FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.388	**1 710-1 930 MHz** FIXED MOBILE 5.384A 5.388A 5.388B	1 710 MHz	1 785 MHz	Cellular mobile (IMT)	Paired with 1805-1880 MHz
			1785 MHz	1805 MHz	BFWA	

		5.149 5.341 5.385 5.388	1 805 MHz	1 880 MHz	Cellular Mobile (IMT)	Paired with 1710-1785 MHz
			1 880 MHz	1 900 MHz	FWA Cordless telephone	
			1 900 MHz	1 920 MHz	FWA	Identified for IMT (terrestrial)
			1 920 MHz	1 980 MHz	IMT (terrestrial)	Paired with 2110-2170 MHz
1 930-1 970 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 930-1 970 MHz** MOBILE 5.388A 5.388B 5.388	**1 930-1 970 MHz** MOBILE 5.388A 5.388B 5.388	1 920 MHz	1 980 MHz	IMT (terrestrial)	Paired with 2110-2170 MHz
1 970-1 980 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 970-1 980 MHz** MOBILE 5.388A 5.388B 5.388	**1 970-1 980 MHz** MOBILE 5.388A 5.388B 5.388	1 920 MHz	1 980 MHz	IMT (terrestrial)	Paired with 2110-2170 MHz
1 980-2 010 MHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	**1 980-2 010 MHz** MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B	**1 980-2 010 MHz** MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B	1980 MHz	2010 MHz	IMT (satellite).	Paired with 2170 - 2200 MHz
2 010-2 025 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 010-2 025 MHz** MOBILE 5.388A 5.388B 5.388	**2 010-2 025 MHz** MOBILE 5.388A 5.388B 5.388			IMT (terrestrial) TDD	TDD
2 025-2 110 MHz SPACE OPERATION (Earth-to-space) (space-to-space)	**2 025-2 110 MHz** SPACE OPERATION (Earth-to-space) (space-to-space)	**2 025-2 110 MHz** SPACE OPERATION (Earth-to-space) (space-to-space)	2 025 MHz	2 110 MHz	Fixed links (dual frequencies	Paired with 2200-2285 MHz ITU-R F.1098 or CEPT 13-01.

EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392				
2 110-2 120 MHz FIXED MOBILE 5.388A5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	**2 110-2 120 MHz** MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	**2 110-2 120 MHz** MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	2110 MHz	2170 MHz	IMT (terrestrial)	Paired with 1920-1980 MHz
2 120-2 160 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 120-2 170 MHz** MOBILE 5.388A 5.388B 5.388					
2 160-2 170 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 160-2 170 MHz** MOBILE 5.388A 5.388B 5.388					
2 170-2 200 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	**2 170-2 200 MHz** MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	**2 170-2 200 MHz** MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	2170 MHz	2200 MHz	IMT (satellite)	Paired with 1980-2010 MHz
2 200-2 290 MHz SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space)	**2 200-2 290 MHz** SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space)	**2 200-2 290 MHz** SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-	2 200 MHz	2 285 MHz	Fixed links (Dual frequencies)	Paired with 2025-2110 MHz ITU-R F.1098 applies

FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	Earth) (space-to-space) FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	2 285 MHz	2 300 MHz	BFWA	

2 290-2 300 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	**2 290-2 300 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	**2 290-2 300 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	2 285 MHz	2 300 MHz	BFWA	
2 300-2 450 MHz FIXED MOBILE 5.384A Amateur Radiolocation 5.150 5.282 5.395	**2 300-2 450 MHz** FIXED MOBILE 5.384A Amateur Radiolocation 5.150 5.282	**2 300-2 450 MHz** FIXED MOBILE 5.384A Amateur Radiolocation 5.150 5.282	2300 MHz	2400 MHz	FIXED IMT (TDD) BFWA	
2 450-2 483.5 MHz FIXED MOBILE Radiolocation 5.150 5.397	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150 5.397	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150 5.397	2400 MHz	2500 MHz	ISM applications (5.150).	SRD applications (2 400-2 483.5 MHz)
2 483.5-2 500 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATIONSATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A	**2 483.5-2 500 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATIONSATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A	**2 483.5-2 500 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation 5.150 5.371 5.398 5.399 5.400 5.402				

5.150 5.399 5.401 5.402	5.150 5.399 5.401 5.402					
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.405 5.412	**2 500-2 520 MHz** FIXED MOBILE except aeronautical mobile 5.384A	**2 500-2 520 MHz** FIXED MOBILE except aeronautical mobile 5.384A			BFWA.	The band 2 500-2 690 MHz is currently used mainly for BFWA. This band is also allocated to the mobile service and identified for IMT.
2 520-2 655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.4135.416 5.3395.4055.412 5.418B 5.418C	**2 520-2 655 MHz** FIXED MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.405 5.412 5.418B 5.418C	**2 520-2 655 MHz** FIXED MOBILE except aeronautical mobile 5.384A 5.339			BFWA.	
2 655-2 670 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 655-2 670 MHz** FIXED MOBILE except aeronautical mobile 5.384A 5.149 5.412	**2 655-2 670 MHz** FIXED MOBILE except aeronautical mobile 5.384A 5.149 5.412			BFWA.	
2 670-2 690 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 670-2 690 MHz** FIXED MOBILE except aeronautical mobile 5.384A 5.149 5.412	**2 670-2 690 MHz** FIXED MOBILE except aeronautical mobile 5.384A 5.149 5.412			BFWA.	
2 690-2 700 MHz	**2 690-2 700 MHz**	**2 690-2 700 MHz**				

EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422				
2 700-2 900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	**2 700-2 900 MHz** AERONAUTICAL RADIONAVIGATION 5.337 5.423	**2 700-2 900 MHz** AERONAUTICAL RADIONAVIGATION 5.337 5.423			Air traffic Control Radar	
2 900-3 100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	**2 900-3 100 MHz** RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	**2 900-3 100 MHz** RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427				
3 100-3 300 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	**3 100-3 300 MHz** RADIOLOCATION 5.149	**3 100-3 300 MHz** RADIOLOCATION 5.149				Government use
3 300-3 400 MHz RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	**3 300-3 400 MHz** RADIOLOCATION MOBILE except aeronautical mobile 5.149 5.429 5.429A 5.429B	**3 300-3 400 MHz** RADIOLOCATION MOBILE except aeronautical mobile 5.149 5.429 5.429A 5.429				IMT Radio Frequency Channel arrangement according to ITUR M.103

3 400-3 600 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation 5.431	**3 400-3 600 MHz** FIXED MOBILE except aeronautical mobile 5.430A SADC16 Radiolocation	**3 400-3 600 MHz** FIXED MOBILE except aeronautical mobile 5.430A SADC16			BFWA. Mobile IMT	IMT Radio Frequency Channel arrangement according to ITUR M.103
3 600-4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth) Mobile	**3 600-4 200 MHz** FIXED FIXED-SATELLITE (space-to-Earth) SADC17	**3 600-4 200 MHz** FIXED FIXED-SATELLITE (space-to-Earth) SADC17	3 600 MHz 3 800 MHz	3 800 MHz 4 200 MHz	BFWA PTP/VSAT/SNG	The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 Annex 1. The sub-band 3 600-4 200 MHz is used for medium and high capacity PTP links and FSS.
4 200-4 400 MHz AERONAUTICAL MOBILE(R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440	**4 200-4 400 MHz** AERONAUTICAL MOBILE(R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.440	**4 200-4 400 MHz** AERONAUTICAL MOBILE(R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438			Radio altimeters onboard aircraft	
4 400-4 500 MHz FIXED MOBILE 5.440A	**4 400-4 500 MHz** FIXED MOBILE	**4 400-4 500 MHz** FIXED MOBILE			Government use	
4 500-4 800 MHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	**4 500-4 800 MHz** FIXED FIXED-SATELLITE (space-Earth) 5.441 MOBILE	**4 500-4 800 MHz** FIXED FIXED-SATELLITE (space-Earth) 5.441 MOBILE			Government use	The band 4 500-4 800 MHz is part of the APP30B Plan (FSS space-to-Earth). Refer to Annex B.
4 800-4 990 MHz FIXED MOBILE 5.440A 5.441A 5.441B 5.442	**4 800-4 990 MHz** FIXED MOBILE 5.441B 5.442 Radio Astronomy	**4 800-4 990 MHz** FIXED MOBILE 5.442 Radio Astronomy			Government use	Band identified for IMT

Radio astronomy 5.149 5.339 5.443	5.149 5.339	5.149 5.339				
4 990-5 000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	**4 990-5 000 MHz** FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive) 5.149	**4 990-5 000 MHz** FIXED MOBILE except Aeronautical Mobile RADIO ASTRONOMY Space Research (passive) 5.149			Government use	
5 000-5 010 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	**5 000-5 010 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	**5 000-5 010 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367			Microwave Landing systems.	
5 010-5 030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.B103 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	**5 010-5 030 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.B103 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	**5 010-5 030 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B 5.367			Microwave Landing systems.	
5 030-5 091 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.D103 AERONAUTICAL RADIONAVIGATION 5.444	**5 030-5 091 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.D103 AERONAUTICAL RADIONAVIGATION 5.444	**5 030-5 091 MHz** AERONAUTICAL RADIONAVIGATION 5.367 5.444			Microwave Landing systems.	

5 091-5 150 MHz FIXED SATELLITE (Earth-to-Space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	**5 091-5 150 MHz** FIXED SATELLITE (Earth-to-Space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	**5 091-5 150 MHz** AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE 5.444B 5.367 5.444 5.444A			Microwave Landing systems.	
5 150-5 250 MHz FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447B 5.447C	**5 150-5 250 MHz** FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447B 5.447C	**5 150-5 250 MHz** AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C 5.447B 5.447C	5 150 MHz	5 350 MHz	Wireless Access Systems (WAS)/RLAN	
5 250-5 255 MHz 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 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	**5 250-5 255 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	5 150 MHz	5 350 MHz	Wireless Access Systems (WAS)/RLAN	
5 255-5 350 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F	**5 255-5 350 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	**5 255-5 350 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	5 150 MHz	5 350 MHz	Wireless Access Systems (WAS)/RLAN	

5.447E 5.448 5.448A	MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	MOBILE except aeronautical mobile 5.446A 5.447F 5.448A				
5 350-5 460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	**5 350-5 460 MHz** EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	**5 350-5 460 MHz** EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D			Ground based and airborne weather Radar	
5 460-5 470 MHz RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	**5 460-5 470 MHz** RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B	**5 460-5 470 MHz** RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B				
5 470-5 570 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	**5 470-5 570 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B	**5 470-5 570 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B	5 470 MHz	5 725 MHz	Wireless Access Systems (WAS)/RLAN	Regional harmonization for BWA

5 570-5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	**5 570-5 650 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A5.450A RADIOLOCATION 5.450B 5.452	**5 570-5 650 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.452	5 470 MHz 5600 MHz	5 725 MHz 5650 MHz	Wireless Access Systems (WAS)/RLAN Ground-based meteorological radars	Regional harmonization for BWA
5 650-5 725 MHz 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 MHz** RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space Research (deep space) 5.282 5.453 SADC18	**5 650-5 725 MHz** RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space Research (deep space) 5.282 5.453 SADC18			Wireless Access Systems (WAS)/RLAN	
5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.1505.4515.453 5.455	**5 725-5 830 MHz** FIXED FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455 SADC18	**5 725-5 830 MHz** RADIOLOCATION Amateur 5.150 5.453 SADC18	5 725 MHz	5 875 MHz	ISM RTTT (Road Transport and Traffic Telematics) SRD - Transport and information control systems	

5 830-5 850 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.451 5.453 5.455	**5 830-5 850 MHz** FIXED FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455 SADC18	**5 830-5 850 MHz** FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-Satellite (space-Earth) 5.150 5.453 SADC18				
5 850-5 925 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	**5 850-5 925 MHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.150	**5 850-5 925 MHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.150	5 875 MHz	5 925 MHz	Fixed links	

5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.1495.4405.458	**5 925-6 700 MHz** FIXED 5.457 FIXED-SATELLITE (Earth-to-space)5.457A 5.457B 5.149 5.440 5.458	**5 925-6 700 MHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.149 5.440 5.458	5 925MHz 6 425 MHz	6 425 MHz 6 700 MHz	Fixed links Fixed links	For high capacity point to point fixed links. Channelling plans in accordance with ITU-R Rec.F.383 Fixed-satellite uplinks (PTP/VSAT/SNG) Channelling plans in accordance with ITU-R Rec. F.384.
6 700-7 075 MHz FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B	**6 700-7 075 MHz** FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 5.458 5.458A 5.458B	**6 700-7 075 MHz** FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 5.458 5.458A 5.458B 5.458C			Fixed links	Fixed links. Channelling plan in accordance with ITU-R Rec. F.384. The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B.
7 075-7 145 MHz FIXED MOBILE 5.458 5.459	**7 075-7 145 MHz** FIXED 5.458 5.460	**7 075-7 145 MHz** FIXED 5.458 5.460			Fixed links	Channelling plan in accordance with ITU-R Rec. F.385
7 145-7190 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 145-7190 MHz** FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 145-7 235 MHz** FIXED 5.458			Fixed links	Channelling plan accordance with ITU-R Rec. F.385
7 190- 7 235 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 190- 7 235 MHz** FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	**7 190- 7 235 MHz** FIXED 5.458			Fixed links	Channelling plan accordance with ITU-R Rec. F.385
7 235-7 250 MHz EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A FIXED MOBILE 5.458	**7 235-7 250 MHz** EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A FIXED 5.458	**7 235-7 250 MHz** FIXED 5.458			Fixed links	Fixed links. Channelling plan in accordance with ITU-R Rec. F.385

7 250-7 300 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	**7 250-7 300 MHz** FIXED 5.461	**7 250-7 300 MHz** FIXED 5.461			Fixed links	Channelling plan accordance with ITU-R Rec. F.385
7 300-7 375 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	**7 300-7 375 MHz** FIXED 5.461	**7 300-7 375 MHz** FIXED 5.461			Fixed links	Channelling plan in accordance with ITU-R Rec. F.385

7 375-7 450 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB	**7 375-7 450 MHz** FIXED MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB	**7 375-7 450 MHz** FIXED 5.461				Channelling plan in accordance with ITU-R Rec. F.385
7 450-7 550 MHz FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB 5.461A	**7 450-7 550 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5.461AB 5.461A	**7 450-7 550 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461A			Fixed links	Channelling plan in accordance with ITU-R Rec. F.385
7 550-7 750 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5461AB	**7 550-7 750 MHz** FIXED MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (Space-to-Earth) 5.461AA 5461AB	**7 550-7 750 MHz** FIXED			Fixed links	Channelling plan in accordance with ITU-R Rec. F.385
7 750-7 900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOD 5.461B MOBILE except aeronautical mobile	**7 750-7 900 MHz** FIXED Meteorological -SATELLITE (space-to-Earth) MOD 5.461B	**7 750-7 900 MHz** FIXED Meteorological - SATELLITE (space-to-Earth) 5.461B			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386

7 900-8 025 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	**7 900-8 025 MHz** FIXED 5.461	**7 900-8 025 MHz** FIXED 5.461			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386
8 025-8 175 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 025-8 175 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A	**8 025-8 175 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386

8 175-8 215 MHz 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 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A	**8 175-8 215 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386
8 215-8 400 MHz EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	**8 215-8 400 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A	**8 215-8 400 MHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED 5.462A			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386
8 400-8 500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466	**8 400-8 500 MHz** FIXED	**8 400-8 500 MHz** FIXED			Fixed links	Channelling plan in accordance with ITU-R Rec. F.386
8 500-8 550 MHz RADIOLOCATION 5.468 5.469	**8 500-8 550 MHz** RADIOLOCATION 5.468	**8 500-8 550 MHz** RADIOLOCATION 5.468			Radiolocation	RADARS - Civil and military aeronautical radionavigation e.g. precision airfield approach radars
8 550-8 650 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	**8 550-8 650 MHz** EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469A	**8 550-8 650 MHz** EARTH EXPLORATION SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469A			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars

8 650-8 750 MHz RADIOLOCATION 5.468 5.469	**8 650-8 750 MHz** RADIOLOCATION 5.468	**8 650-8 750 MHz** RADIOLOCATION 5.468			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
8 750-8 850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	**8 750-8 850 MHz** RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470	**8 750-8 850 MHz** RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
8 850-9 000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	**8 850-9 000 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472	**8 850-9 000 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
9 000-9 200 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471 5.473A	**9 000-9 200 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.473A	**9 000-9 200 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.473A			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
9 200-9 300 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	**9 200-9 300 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	**9 200-9 300 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
9 300-9 500 MHz RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION	**9 300-9 500 MHz** RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION	**9 300-9 500 MHz** RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars

5.427 5.474 5.475 5.475A 5.475B 5.476A	5.427 5.474 5.475 5.475A 5.475B 5.476A	5.427 5.474 5.475 5.475A 5.475B 5.476A				
9 500-9 800 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	**9 500-9 800 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	**9 500-9 800 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
9 800-9 900 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	**9 800-9 900 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.478A 5.478B	**9 800-9 900 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.478A 5.478B				
9 900-10 000 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5474C RADIOLOCATION Fixed 5.474D 5.477 5.478 5.479	**9 900-10 000 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474B 5474C RADIOLOCATION Fixed 5.474D 5.477 5.478 5.479	**9 900-10 000 MHz** RADIOLOCATION 5.479			RADARS	RADARS. Civil and military aeronautical radionavigation e.g. precision airfield approach radars
10-10.4 GHz EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4 GHz** EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4 GHz** EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4 GHz** EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE	10.15 MHz	10.30 GHz	Fixed wireless Access

			RADIOLOCATION Amateur 5.474D 5.479			
10.4-10.45 GHz FIXED MOBILE RADIOLOCATION Amateur	**10.4-10.45 GHz** FIXED RADIOLOCATION	**10.4 -10.45 GHz** FIXED RADIOLOCATION 5.479	**10.4 -10.45 GHz** BFWA			
10.45-10.5 GHz RADIOLOCATION Amateur Amateur-satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION Amateur Amateur-Satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION Amateur Amateur-Satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION Amateur Amateur-Satellite 5.481			
10.5-10.55 GHz FIXED MOBILE Radiolocation	**10.5-10.55 GHz** FIXED	**10.5-10.55 GHz** FIXED	**10.5-10.55 GHz** BFWA	10.50 GHz	10.65 GHz	Fixed Wireless Access
10.55-10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation	**10.55-10.6 GHz** FIXED	**10.55-10.6 GHz** FIXED	**10.55-10.6 GHz** BFWA	10.50 GHz	10.65 GHz	Fixed Wireless Access
10.6-10.68 GHz EARTH EXPLORATION-SATELLITE (passive)	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive)	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive)	**10.6-10.68 GHz** BFWA	10.50 GHz	10.65 GHz	Fixed Wireless Access

FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	FIXED RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.482 5.482A	FIXED RADIO ASTRONOMY SPACE RESEARCH (passive) 5.1495.482 5.482A				
10.68-10.7 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
10.7 – 10.95 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.7 – 10.95 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.7 – 10.95 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**10.7 – 10.95 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile			
10.95-11.2 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484	**10.95-11.2 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484	**10.95 -11.2 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A	**10.95-11.2 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.441			Fixed links

MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	(Earth-to-space) 5.484	5.484A (Earth-to-space) 5.484			

11.2-11.45 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.2-11.45 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.2-11.45 GHz** FIXED FIXED SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile				
11.45-11.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.45-11.7 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.45-11.7 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile				
11.7-12.5 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	**11.7-12.5 GHz** BROADCASTING-SATELLITE 5.492 5.487 5.487A	**11.7-12.5 GHz** BROADCASTING-SATELLITE 5.492 5.487 5.487A				This band is available for BSS in accordance with Appendix 30 of ITU RR. Refer to Annex B.
12.5-12.75 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 4.484B (Earth-to-space) 5.494 5.495 5.496	**12.5-12.75 GHz** FIXED-SATELLITE (space-to-Earth) 4.484B (Earth-to-space) 5.494 5.495	**12.5-12.75 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.494 5.495			Fixed links	FSS uplinks (VSAT/SNG)
12.75-13.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE	**12.75-13.25 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.441	**12.75-13.25 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.441			Fixed links	Fixed links -Channelling plan in accordance with ITU-R Rec. F.497. The band 12.75-13.25 GHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B.

Space research (deep space) (space-to-Earth)						
13.25-13.4 GHz EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	**13.25-13.4 GHz** EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A	**13.25-13.4 GHz** EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A				
13.4-13.65 GHz EARTH EXPLORATION – SATELLITE (active) FIXED SATELLITE (space-to-Earth) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal satellite (Earth-to-space) 5.499E 5.500 5.501 5.501B	**13.4-13.65 GHz** EARTH EXPLORATION – SATELLITE (active) FIXED SATELLITE (space-to-Earth) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal satellite (Earth-to-space) 5.499E 5.500 5.501B	**13.4-13.65 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.4995.5005.5015.501B				
13.65-13.75 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	**13.65-13.75 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501B	**13.65-13.75 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A 5.500 5.501B				

13.75-14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	**13.75-14 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION 5.500 5.502 5.503	**13.75-14 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION 5.500 5.502 5.503	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)

14-14.25 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C5.506A Space research 5.504A 5.505	**14-14.25 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.504C 5.506A Space Research 5.504A 5.505	**14-14.25 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B FIXED Mobile-Satellite (Earth-to-space) 5.504B 5.504C 5.506A 5.504A 5.505	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)
14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	**14.25-14.3 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.508A Space Research 5.504A 5.505	**14.25-14.3 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.508A 5.504A 5.505	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)
14.3-14.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.5065.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	**14.3-14.4 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	**14.3-14.4 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A 5.504A	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
14.4-14.47 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	**14.4-14.47 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	**14.4-14.47 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A 5.504A	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)
14.47-14.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.5065.506B 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 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	**14.47-14.5 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B Mobile-Satellite (Earth-to-space) 5.504B 5.506A 5.509A 5.149 5.504A	13.75 GHz	14.5 GHz	Fixed links	FSS uplinks (PTP/VSAT/SNG)
14.5-14.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F5.510 MOBILE Space research5.509G	**14.5-14.75 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G	**14.5-14.8 GHz** FIXED Fixed links - 15 GHz (14.5-15.35 GHz)	14.5 GHz	15.35 GHz	Fixed links	Channelling plan for Fixed links in the 15 GHz band in accordance with ITU-R Rec. F.636. The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some SADC countries. Refer to Annex B.

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
14.75-14.8 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G	**14.75-14.8 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.510 Space research 5.509G					
14.8-15.35 GHz FIXED MOBILE Space research 5.339	**14.8-15.35 GHz** FIXED 5.339	**14.8-15.35 GHz** FIXED 5.339			Fixed links	Channelling plan for Fixed links in the 15 GHz band in accordance with ITU-R Rec. F.636.
15.35-15.4 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	**15.35-15.4 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**15.35-15.4 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
15.4-15.43 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.4-15.43 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.4-15.43 GHz** AERONAUTICAL RADIONAVIGATION 5.511D			Radio altimeters / Radars	
15.43-15.63 GHz FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.43-15.63 GHz** FIXED-SATELLITE (Earth-to-space)5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	**15.43-15.63 GHz** FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C			Radars	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
5.511C						
15.63-15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.63-15.7 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.63-15.7 GHz** AERONAUTICAL RADIONAVIGATION 5.511D			Radars	
15.7-16.6 GHz RADIOLOCATION 5.512 5.513	**15.7-16.6 GHz** RADIOLOCATION 5.512	**15.7-16.6 GHz** RADIOLOCATION 5.512			Government use	
16.6-17.1 GHz RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	**16.6-17.1 GHz** RADIOLOCATION Space Research (deep space)(Earth-to-space) 5.512	**16.6-17.1 GHz** RADIOLOCATION Space Research (deep space)(Earth-to-space) 5.512				
17.1-17.2 GHz RADIOLOCATION 5.512 5.513	**17.1-17.2 GHz** RADIOLOCATION 5.512	**17.1-17.2 GHz** RADIOLOCATION 5.512			WAS/RLAN	WAS/RLAN (17.1 -17.3)
17.2-17.3 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	**17.2-17.3 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513A	**17.2-17.3 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513A			WAS/RLAN	WAS/RLAN (17.1 -17.3)
17.3-17.7 GHz FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7 GHz** FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7 GHz** FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514				The band 17.3-17.7 GHz is part of the APP30A Plan (Feeder Links for BSS) for many SADC countries; refer to Annex B. The band 17.3-17.7 GHz is identified for HDFFS; Res.143 applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
17.7-18.1 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	**17.7-18.1 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516	**17.7-18.1 GHz** FIXED	.			Channelling plan in accordance with ITU-R Rec. F.595 Annex 1.
18.1-18.4 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 MOBILE 5.519 5.521	**18.1-18.4 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.484A 5.517A 5.519	**18.1-18.4 GHz** FIXED 5.519				
18.4-18.6 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A MOBILE	**18.4-18.6 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.484A 5.517A	**18.4-18.6 GHz** FIXED				
18.6-18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	**18.6-18.8 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.522A FIXED – SATELLITE (space-to-Earth)5.517A 5.522B	**18.6-18.8 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.522A				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
18.8-19.3 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A MOBILE	**18.8-19.3 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A	**18.8-19.3 GHz** FIXED				
19.3-19.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E MOBILE	**19.3-19.7 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.517A 5.523D	**19.3-19.7 GHz** FIXED				
19.7-20.1 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-Satellite (space-to-Earth) 5.524				The band 19.7-20.2 GHz is identified for HDFFS; Res.143 applies.
20.1-20.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528				The band 19.7-20.2 GHz is identified for HDFFS; Res.143 applies.
20.2-21.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth)	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth)				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524	MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.524	MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.524				
21.2-21.4 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED SPACE RESEARCH (passive)	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3.
21.4-22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	**21.4-22 GHz** FIXED BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	**21.4-22 GHz** FIXED BROADCASTING-SATELLITE 5.208B 5.530	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3 The use of BSS in this band is subject to the provisions of Res.525.
22-22.21 GHz FIXED MOBILE except aeronautical mobile 5.149	**22-22.21 GHz** FIXED 5.149	**22-22.21 GHz** FIXED 5.149	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3.
22.21-22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	**22.21-22.5 GHz** FIXED	**22.21-22.5 GHz** FIXED 5.149 5.532	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3.

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
SPACE RESEARCH (passive) 5.1495.532	5.149 5.532					
22.5-22.55 GHz FIXED MOBILE	**22.5-22.55 GHz** FIXED	**22.5-22.55 GHz** FIXED	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3.
22.55-23.15 GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	**22.55-23.15 GHz** FIXED INTER-SATELLITE 5.338A SPACE RESEARCH (Earth-to-space) ADD 5.A111 5.149	**22.55-23.55 GHz** FIXED INTER-SATELLITE 5.338A 5.149	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	Channelling plan in accordance with ITU-R Rec. F.637 Annex 1 or Annex3.
23.15-23.55GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	**23.15-23.55 GHz** FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149					
23.55-23.6 GHz FIXED MOBILE	**23.55-23.6 GHz** FIXED	**23.55-23.6 GHz** FIXED	21.2 GHz	23.6 GHz	Fixed links - 23 GHz band	
23.6-24 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**23.6-24 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**23.6-24 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
24-24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE	24.0 GHz	24.25 GHz	ISM	Common international SRD band
24.05-24.25 GHz RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150	**24.05-24.25 GHz** RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150	**24.05-24.25 GHz** RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150	24.0 GHz	24.25 GHz	ISM	Common international SRD band
24.25-24.45 GHz FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.25-24.45 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.25-24.45 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB			Temporary fixed links for ENG/OB IMT Res 242 (WRC-19) applie	IMT (24.25-27.5 GHz)
24.45-24.65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.45-24.65 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.45-24.65 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	24.5 GHz	26.5 GHz	BFWA	
24.65-24.75 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.65-24.75 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	**24.65-24.75 GHz** FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	24.5 GHz	26.5 GHz	BFWA	Channelling Plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1. IMT Res 242 (WRC-19) applies
24.75-25.25 GHz FIXED FIXED SATELLITE	**24.75-25.25 GHz** FIXED FIXED SATELLITE	**24.75-25.25 GHz** FIXED	24.5 GHz	26.5 GHz	BFWA	Channelling Plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1. IMT Res 242 (WRC-19) applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
(Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	(Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	FIXED SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338AB				
25.25-25.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	**25.25-25.5 GHz** FIXED MOBILE 5.338A 5.532AB	**25.25-25.5 GHz** FIXED MOBILE 5.338A 5.532AB	24.5 GHz	26.5 GHz	BFWA	Channelling Plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1. IMT Res 242 (WRC-19) applies
25.5-27 GHz EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B FIXED MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C 5.536A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B FIXED MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C	24.5 GHz	26.5 GHz	BFWA	Channelling Plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1. IMT Res 242 (WRC-19) applies
27-27.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	**27-27.5 GHz** FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	**27-27.5 GHz** FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB			Government use	IMT Res 242 (WRC-19) applies
27.5-28.5 GHz FIXED 5.537A	**27.5-28.5 GHz** FIXED 5.537A	**27.5-28.5 GHz** FIXED 5.537A	27.5 GHz	29.5 GHz	BFWA	Channelling Plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2. The band 27.5-27.82 GHz is identified for HDFFS; Res.143 applies. The band 27.5-30

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 MOBILE 5.5385.540	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 5.538 5.540	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 5.538 5.540				GHz may be used by the FSS for BSS feeder link
28.5-29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**28.5-29.1 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 5.540	**28.5-29.1 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 5.540	27.5 GHz	29.5 GHz	BFWA	Channelling Plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2. The band 27.5-27.82 GHz is identified for HDFFS; Res.143 applies. The band 27.5-30 GHz may be used by the FSS for BSS feeder link
29.1-29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**29.1-29.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A 5.540	**29.1-29.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A 5.540	27.5 GHz	29.5 GHz	BFWA	
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A5.484B 5.516B5.427A 5.539	**29.5-29.9 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.427A 5.539 Earth exploration-satellite (Earth-to-space) 5.541	**29.5-29.9 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth Exploration-Satellite (Earth-to-space) 5.541			Fixed satellite services	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	Mobile-satellite (Earth-to-space) 5.540 5.542	Mobile-Satellite (Earth-to-space) 5.540				
29.9-30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.427A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.5415.543 5.5255.5265.5275.5385. 5405.542	**29.9-30 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.427A 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 GHz** 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			Fixed satellite services	
30-31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	**30-31 GHz** FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth)	**30-31 GHz** FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth)				
31-31.3 GHz FIXED 5.338A 5.543B MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545	**31-31.3 GHz** FIXED 5.338A 5.543B MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.149	**31-31.3 GHz** FIXED 5.338A 5.543A MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.149			Fixed links	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
5.149						
31.3-31.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**31.3-31.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**31.3-31.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
31.5-31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	**31.5-31.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.546	**31.5-31.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except Aeronautical Mobile 5.149 5.546				
31.8-32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	**31.8-32 GHz** FIXED 5.547A 5.547 5.548	**31.8-32 GHz** FIXED 5.547A 5.547 5.548	31.8 GHz	33.4 GHz	Fixed links (PTP/PTMP)	
32-32.3 GHz FIXED 5.547A RADIONAVIGATION	**32-32.3 GHz** FIXED 5.547A 5.547 5.548	**32-32.3 GHz** FIXED 5.547A 5.547 5.548	31.8 GHz	33.4 GHz	Fixed links (PTP/PTMP)	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548						
32.3-33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	**32.3-33 GHz** FIXED 5.547A 5.547 5.548	**32.3-33 GHz** FIXED 5.547A 5.547 5.548	31.8 GHz	33.4 GHz	Fixed links (PTP/PTMP)	
33-33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E	**33-33.4 GHz** FIXED 5.547A 5.547	**33-33.4 GHz** FIXED 5.547A 5.547	31.8 GHz	33.4 GHz	Fixed links (PTP/PTMP)	
33.4-34.2 GHz RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION 5.549			Government use	
34.2-34.7 GHz RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	**34.2-34.7 GHz** RADIOLOCATION SPACE RESEARCH (deep space)(Earth-to-space) 5.549	**34.2-34.7 GHz** RADIOLOCATION SPACE RESEARCH (deep space)(Earth-to-space) 5.549			Government use	
34.7-35.2 GHz RADIOLOCATION Space research 5.550 5.549	**34.7-35.2 GHz** RADIOLOCATION Space Research 5.549	**34.7-35.2 GHz** RADIOLOCATION Space Research 5.549			Government use	
35.2-35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION 5.549	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION 5.549			Government use	

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
35.5-36 GHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	**35.5-36 GHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	**35.5-36 GHz** METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.551A 5.549 5.549A			Government use	
36-37 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	**36-37 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	**36-37 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A			Government use	
37-37.5 GHz FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) 5.547	**37-37.5 GHz** FIXED MOBILE except aeronautical mobile 5.550B 5.547	**37-37.5 GHz** FIXED MOBILE except aeronautical mobile 5.550B 5.547	37.0 GHz	39.5 GHz	Fixed links	The band 37-40 GHz is identified for HDFS; Res.75 applies. Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. IMT Res 243 (WRC-19) applies
37.5-38 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth)	**37.5-38 GHz** FIXED MOBILE except aeronautical mobile 5.550B	**37.5-38 GHz** FIXED MOBILE except aeronautical mobile 5.550B	37.0 GHz	39.5 GHz	Fixed links - 38 GHz (37.039.5 GHz) IMT (37-43.5 GHz	The band 37-40 GHz is identified for HDFS; Res.75 applies. Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. IMT Res 243 (WRC-19) applies

ITU Region 1 allocations and footnotes	SADC common allocation/s and relevant ITU footnotes	Lesotho National allocation/s and footnotes	Additional information			
Earth exploration-satellite (space-to-Earth) 5.547	5.547					
38-39.5 GHz FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth) 5.550E 5.547	**38-39.5 GHz** FIXED 5.550D MOBILE 5.550B 5.547	**38-39.5 GHz** FIXED 5.550D MOBILE 5.550B	37.0 GHz	39.5 GHz	Fixed links - 38 GHz (37.039.5 GHz) IMT (37-43.5 GHz	The band 37-40 GHz is identified for HDFS; Res.75 applies. Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. IMT Res 243 (WRC-19) applies
39.5-40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E	**39.5-40 GHz** FIXED MOBILE 5.550B 5.547	**39.5-40 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547			IMT (37-43.5 GHz	The band 37-40 GHz is identified for HDFS; Res.75 applies. Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. IMT Res 243 (WRC-19) applies

40-40.5 GHz EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	**40-40.5 GHz** FIXED MOBILE 5.550B	**40-40.5 GHz** FIXED MOBILE 5.550B			Government use IMT (37-43.5 GHz	
40.5-41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	**40.5-41 GHz** FIXED LAND MOBILE 5.550B Aeronautical Mobile Maritime Mobile 5.547	**40.5-41 GHz** FIXED LAND MOBILE 5.550B Aeronautical Mobile Maritime Mobile	40.5 GHz	43.5 GHz	Fixed links IMT (37-43.5 GHz	BFWA or MWS (40.5 – 43.5) The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies. Res 243 (WRC-19) applies
41-42.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547 5.551F 5.551H 5.551I	**41-42.5 GHz** FIXED LAND MOBILE 5.516B Aeronautical Mobile Maritime Mobile 5.547	**41-42.5 GHz** FIXED LAND MOBILE 5.516B Aeronautical Mobile Maritime Mobile 5.547	40.5 GHz	43.5 GHz	Fixed links IMT (37-43.5 GHz	BFWA or MWS (40.5 – 43.5) The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies. Res 243 (WRC-19) applies
42.5-43.5 GHz	**42.5-43.5 GHz**	**42.5-43.5 GHz**	40.5 GHz	43.5 GHz	Fixed links	BFWA or MWS (40.5 – 43.5)

FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY 5.149 5.547	FIXED MOBILE except Aeronautical Mobile 5.550B RADIO ASTRONOMY 5.149 5.547	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except Aeronautical Mobile RADIO ASTRONOMY 5.149 5.547			IMT (37-43.5 GHz	The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies. Res 243 (WRC-19) applies
43.5-47 GHz MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**43.5-47 GHz** MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**43.5-47 GHz** MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	43.5 GHz	45.5 GHz		Government use (43.545.5 GHz) IMT (45.5-47 GHz)
47-47.2 GHz AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE				IMT (47.2-48.2 GHz)

47.2-47.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.2-47.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.553B 5.552A	**47.2-47.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A				IMT (47.2-48.2 GHz) Res 243 (WRC-19) applies The bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for HAPS Res 122 (rev. WRC-19) applies
47.5-47.9 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE				IMT (47.2-48.2 GHz) Res 243 (WRC-19) applies The bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for HAPS Res 122
47.9-48.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.9-48.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	**47.9-48.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A				IMT (47.2-48.2 GHz) Res 243 (WRC-19) applies The bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for HAPS Res 122
48.2-48.54 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**48.2-48.54 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**48.2-48.54 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE				IMT (47.2-48.2 GHz) Res 243 (WRC-19) applies The bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for HAPS Res 122
48.54-49.44 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555	**48.54-49.44 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.340 5.555	**48.54-49.44 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.340 5.555				

49.44-50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**49.44-50.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A5.555B MOBILE	**49.44-50.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE				The band 49.44-50.2 GHz is identified for HDFFS; Res.143 applies
50.2-50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**50.2-50.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**50.2-50.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340				
50.4-51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	**50.4-51.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-Satellite (Earth-to-space)	**50.4-51.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-Satellite (Earth-to-space)				
51.4-52.4 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	**51.4-52.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	**51.4-52.4 GHz** FIXED MOBILE 5.547 5.556				The band 51.4-52.6 GHz is identified for HDFS; Res.75 applies
52.4-52.6 GHz FIXED 5.338A MOBILE 5.547 5.556	**52.4-52.6 GHz** FIXED 5.338A MOBILE 5.547 5.556	**52.4-52.6 GHz** FIXED 5.338A MOBILE 5.547 5.556				
52.6-54.25 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	**52.6-54.25 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	**52.6-54.25 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556				

5.340 5.556						
54.25-55.78 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	**54.25-55.78 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)	**54.25-55.78 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)				
55.78-56.9 GHz 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 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	**55.78-56.9 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547				The band 55.78-59 GHz is identified for HDFS; Res.75 applies
56.9-57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	**56.9-57 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	**56.9-57 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547				The band 55.78-59 GHz is identified for HDFS; Res.75 applies
57-58.2 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	**57-58.2 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	**57-58.2 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547				The band 55.78-59 GHz is identified for HDFS; Res.75 applies
58.2-59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED	**58.2-59 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED	**58.2-59 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED				The band 55.78-59 GHz is identified for HDFS; Res.75 applies

MOBILE SPACE RESEARCH (passive) 5.547 5.556	MOBILE SPACE RESEARCH (passive) 5.547 5.556	MOBILE SPACE RESEARCH (passive) 5.547 5.556				

59-59.3 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	**59-59.3 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	**59-59.3 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)			Government use	
59.3-64 GHz FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	**59.3-64 GHz** FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	**59.3-64 GHz** FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	59 GHz 61 GHz	61 GHz 61.5 GHz	Government Use ISM	The band 61-61.5 GHz is designated for ISM applications (5.138). The band 59 - 61 GHz reserved for government use. Common international SRD band; see ITU-R Rec.SM.2153
64-65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	**64-65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	**64-65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556				The band 64 – 66 GHz is identified for HDFS; Res.75 applies.
65-66 GHz EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	**65-66 GHz** EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	**65-66 GHz** EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547				The band 64 – 66 GHz is identified for HDFS; Res.75 applies.
66-71 GHz INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION	**66-71 GHz** MOBILE 5.553 5.558 5.559AA	**66-71 GHz** MOBILE 5.553 5.558 5.559AA				Res 241 (WRC-19) applies

RADIONAVIGATION-SATELLITE 5.554						
71-74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**71-74 GHz** FIXED MOBILE	**71-74 GHz** FIXED MOBILE	71 GHz	76 GHz	Fixed links	E-band PTP links
74-76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	**74-76 GHz** FIXED 5.561	**74-76 GHz** FIXED MOBILE	71 GHz	76 GHz	Fixed links	E-band PTP links
76-77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**76-77.5 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth) 5.149	**76-77.5 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-Earth) 5.149	76 GHz	77 GHz	SRD - Road Transport and Traffic Telematics Radar (76 – 77 GHz)	Common international SRD band; see ITU-R Rec.SM.2153 and Rec. M.1452
77.5-78 GHz AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth)	**77.5-78 GHz** AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth)	**77.5-78 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149				

5.149	5.149					
78-79 GHz RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	**78-79 GHz** RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	**78-79 GHz** RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560				
79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**79-81 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**79-81 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149				
81-84 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A 5.338A	**81-84 GHz** FIXED 5.149 5.338A	**81-84 GHz** FIXED	81 GHz	86 GHz	Fixed links	E-band PTP links
84-86 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.561B	**84-86 GHz** FIXED 5.149 5.338A	**84-86 GHz** FIXED				

MOBILE RADIO ASTRONOMY 5.149 5.338A						

86-92 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**86-92 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**86-92 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
92-94 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 5.338A	**92-94 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.1495.338A	**92-94 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149				
94-94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	**94-94.1 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	**94-94.1 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A				
94.1-95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**94.1-95 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**94.1-95 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149				
95-100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**95-100 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**95-100 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554				
100-102 GHz	**100-102 GHz**	**100-102 GHz**				

EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341				
102-105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	**102-105 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	**102-105 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149 5.341				
105-109.5 GHz RADIO ASTRONOMY MOD 5.562B	**105-109.5 GHz** RADIO ASTRONOMY MOD 5.562B	**105-109.5 GHz** RADIO ASTRONOMY MOD 5.562B				
109.5-111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**109.5-111.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**109.5-111.8 GHz** EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341				
111.8-114.25 GHz FIXED MOBILE RADIO ASTRONOMY MOD 5.562B SPACE RESEARCH (passive) 5.562B 5.149 5.341	**111.8-114.25 GHz** FIXED MOBILE RADIO ASTRONOMY MOD 5.562B SPACE RESEARCH (passive) 5.562B 5.149 5.341	**111.8-114.25 GHz** FIXED MOBILE RADIO ASTRONOMY MOD 5.562B SPACE RESEARCH (passive) 5.562B 5.149 5.341				
114.25-116 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**114.25-116 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**114.25-116 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341				
116-119.98 GHz	**116-119.98 GHz**	**116-119.98 GHz**				

EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341				
119.98-122.25 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	**119.98-122.25 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	**119.98-122.25 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341				
122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	**122.25-123 GHz** FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	**122.25-123 GHz** FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138				
123-130 GHz FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	**123-130 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	**123-130 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554				
130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	**130-134 GHz** EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	**130-134 GHz** EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A				

134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy				

136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**136-141 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**136-141 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149				
141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**141-148.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**141-148.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149				
148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**148.5-151.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**148.5-151.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149				
155.5-158.5 GHz FIXED MOBILE RADIO ASTRONOMY 5.149	**155.5-158.5 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149	**155.5-158.5 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149				
158.5-164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	**158.5-164 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	**158.5-164 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE				

MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)				
164-167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**164-167 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**164-167 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
167-174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	**167-174.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	**167-174.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D				
174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	**174.5-174.8 GHz** FIXED INTER-SATELLITE MOBILE 5.558	**174.5-174.8 GHz** FIXED INTER-SATELLITE MOBILE 5.558				

174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**174.8-182 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**174.8-182 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)				
182-185 GHz EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**182-185 GHz** EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**182-185 GHz** EARTH-EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**185-190 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	**185-190 GHz** EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)				
190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**190-191.8 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**190-191.8 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340				
191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.19 5.341 5.554	**191.8-200 GHz** FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.19 5.341 5.554	**191.8-200 GHz** FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.19 5.341 5.554				
200-209 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	**200-209 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	**200-209 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)				

5.340 5.341 5.563A	5.340 5.341 5.563A	5.340 5.341 5.563A				
209-217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	**209-217 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	**209-217 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341				
217-226 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**217-226 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**217-226 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341				
226-231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**226-231.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**226-231.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340				
231.5-232 GHz FIXED MOBILE Radiolocation	**231.5-232 GHz** FIXED MOBILE Radiolocation	**231.5-232 GHz** FIXED MOBILE Radiolocation				
232-235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	**232-235 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	**232-235 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE				

Radiolocation	Radiolocation	Radiolocation				
235-238 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	**235-238 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	**235-238 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B				
238-240 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**238-240 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**238-240 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATIONSATELLITE				
240-241 GHz FIXED MOBILE RADIOLOCATION	**240-241 GHz** FIXED MOBILE RADIOLOCATION	**240-241 GHz** FIXED MOBILE RADIOLOCATION				
241-248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**241-248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**241-248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149				
248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149				
250-252 GHz EARTH EXPLORATION-SATELLITE (passive)	**250-252 GHz** EARTH EXPLORATION-SATELLITE (passive)	**250-252 GHz** EARTH EXPLORATION-SATELLITE (passive)				

RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A				
252-265 GHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**252-265 GHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**252-265 GHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554				
265-275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	**265-275 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	**265-275 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A				
275-3000 GHz (Not allocated) 5.565 ADD 5.X115	**275-3000 GHz** (Not allocated) 5.565 ADD 5.X115	**275-3000 GHz** (Not allocated) 5.565 ADD 5.X115				

Annex A: Satellite planned bands orbital slots relevant to SADC countries

Satellite orbital slots relevant to SADC countries pertaining to **Appendix 30** (BSS), **Appendix 30A** (BSS Feeder Links) and **Appendix 30B** (FSS):

Nr.	Country Name	ITU Symbol	APP30/30A Orbital slot	APP30B Orbital slot
1	Angola	AGL	-24.80	-36.10
2	Botswana	BOT	-0.80	21.20
3	Comoros	COM		
4	DRC	COD	-19.20	50.95
5	Eswatini	SWZ	4.80	30.10
6	Lesotho	LSO	4.80	-19.30
7	Madagascar	MDG	29.0	16.90
8	Malawi	MWI	4.80	28.00
9	Mauritius	MAU	29.0	92.20
10	Mozambique	MOZ	-1.0	90.60
11	Namibia	NMB	-18.80	12.20
12	Seychelles	SEY	42.50	42.25
13	South Africa	AFS	4.80	71.00
14	Tanzania	TZA	11.0	67.50
15	Zambia	ZMB	-0.80	39.55
16	Zimbabwe	ZWE	-0.80	65.60

Annex B: Satellite Planned Bands relevant to SADC

Satellite frequency bands relevant to SADC countries pertaining to **Appendix 30** (BSS), **Appendix 30A** (BSS Feeder Links) and **Appendix 30B** (FSS) are:

APP30:	11.7 – 12.5 GHz (all countries)
APP30A:	14.5 – 14.8 GHz (AFS, MOZ, NMB, SEY) 17.3 – 18.1 GHz (AGL, BOT, COD, LSO, MDG, MWI, MAU, SWZ, TZA, ZMB, ZWE)
APP30B:	4500 – 4800 MHz (all countries), space-to-Earth 6725 – 7025 MHz (all countries), Earth-to-space 10.7 – 10.95 GHz (all countries), space-to-Earth 11.2 – 11.45 GHz (all countries), space-to-Earth 12.75 – 13.25 GHz (all countries), Earth-to-space

Annex C: ITU Radio Regulations Footnotes Containing References to SADC Country Names

ITU footnote	AFS	AGL	BOT	COD	COM	LSO	MAU	MDG	MOZ	MWI	NMB	SEY	SWZ	TZA	ZMB	ZWE	Total
5.68	X			X													2
5.70	X	X	X	X		X		X	X	X	X		X	X	X	X	13
5.87		X	X			X			X	X	X		X				7
5.107													X				1
5.123	X		X			X			X	X	X		X		X	X	9
5.128			X														1
5.140		X															1
5.141								X									1
5.141B			X		X												2
5.160			X	X													2
5.164	X		X					X					X				4
5.165		X						X	X					X			4
5.169	X		X			X				X	X		X		X	X	8
5.169A		X					X	X						X			4

ITU footnote	AFS	AGL	BOT	COD	COM	LSO	MAU	MDG	MOZ	MWI	NMB	SEY	SWZ	TZA	ZMB	ZWE	Total
5.171	X		X	X		X				X	X		X		X	X	9
5.201									X								1
5.211														X			1
5.212	X	X	X	X		X			X	X	X		X		X	X	11
5.214														X			1
5.221	X		X			X			X		X		X	X	X	X	9
5.228AC	X																1
5.252	X		X			X			X	X	X		X		X	X	9
5.262			X														1
5.277		X															1
5.294										X							1
5.296	X	X	X			X	X		X	X	X		X	X	X	X	12
5.322	X					X				X	X			X	X	X	7
5.330		X															1
5.331	X					X		X									3
5.346	X	X	X	X		X		X	X	X	X		X	X	X	X	13
5.369		X		X				X							X		4
5.388B					X									X	X	X	4
5.401		X		X				X					X		X		5
5.422				X													1
5.429				X													1
5.429A	X	X	X	X		X			X	X	X		X	X	X	X	12
5.429B	X	X	X	X		X			X	X	X		X	X	X	X	12
5.441B	X	X	X				X	X	X	X			X	X	X	X	11
5.453	X	X	X	X		X	X	X	X	X	X		X	X	X	X	14
5.468													X				1
5.481		X															1

ITU footnote	AFS	AGL	BOT	COD	COM	LSO	MAU	MDG	MOZ	MWI	NMB	SEY	SWZ	TZA	ZMB	ZWE	Total
5.494				X				X									2
5.500								X									1
5.504C			X														1
5.505			X										X				2
5.508A			X														1
5.509A			X														1
5.512				X													1
5.524				X													1
5.536B														X		X	2
5.536C			X		X									X	X	X	4
5.546	X																1
5.549				X													1
5.553A	X	X	X			X	X	X	X	X	X	X	X	X	X	X	13
5.553B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
Total	21	19	26	18	4	17	5	15	17	17	16	2	21	18	20	19	255

Annex D: SADC country footnotes relevant to SADC FAP 2020

SADC 1: (26 175-27 500 kHz)
Alternative allocation: In SEY the band 26.9 – 27.0 MHz is reserved.
Alternative allocation: In SEY the band 27 185-27 275 kHz is allocated to ISM only.

SADC2: (29.7-30.005 MHz)
Additional allocation: In AFS this band is also allocated to the amateur service on a secondary basis for use during disaster and emergency situations.

SADC3: (40.02-40.98 MHz)
Additional allocation: In AFS this band is also allocated to the amateur service on a secondary basis used for radio propagation studies.

SADC4: (68-74.8 MHz)
Alternative allocation: In SEY the band 68-70 MHz is reserved.

SADC5: (138-144 MHz)
Alternative allocation: In SEY the band 138.0-144.0 MHz is allocated to the AM(OR)S.

SADC6: (148-149.9 MHz)
Alternative allocation: In TZA the band 148-149.9 MHz is allocated to the fixed and mobile services.

SADC7: (156.8375-174 MHz)
Alternative allocation: In SEY the band 162.550-169.800 MHz is reserved.

SADC8 (230-235 MHz)
Alternative allocation: In SEY the band 230-235 MHz is reserved. In AGL this band is also used for systems ancillary to broadcasting.

SADC9 (235-267 MHz)
Alternative allocation: In SEY the band 235-238 MHz is allocated to the fixed and mobile service. In AGL this band is also used for systems ancillary to broadcasting.

SADC10 (387-390 MHz)
Alternative allocation: In SEY the band 387-399.9 MHz is reserved

SADC11 (410-433.05 MHz)
Additional allocation: In LSO the band 410-433.05 MHz is allocated to the fixed and mobile and amateur services on a primary basis.

SADC12 (470-790 MHz)

Additional allocation: In AFS the band 606-614 MHz is also used for radio astronomy.

SADC13 (790-862 MHz)

Alternative allocation: In AFS the band 854-862 MHz is allocated to fixed links.

Additional allocation: In BOT the band 825-835 MHz is also allocated to the fixed links.

These fixed link allocations will be investigated and must be migrated in order to introduce IMT in the band.

SADC14 (862-890 MHz)

Additional allocation: In AFS the band 864.1-868.1 MHz is also allocated to the fixed wireless access service.
Additional allocation: In ZWE the band 862-890 MHz is also allocated to fixed links.
Additional allocation: In MOZ this band is also used for fixed telemetry.

SADC15 (1 492-1 452 MHz)

Additional pairing: In TZA the band 1497-1507 MHz is also paired with 1430-1440 MHz.
Additional pairing: In ZWE the band 1492-1525 MHz is also paired with 1427-1452 MHz.

SADC16 (3 400-3 600 MHz)

Additional allocation: In AGL the band 3400-3600 MHz is also used for FSS (space-to-Earth).

SADC17 (3 600 – 4 200 MHz)

In NAM the band 3 800 – 4 200 MHz is used only for FSS (space-to-Earth)

SADC18 (5 650-5 725 MHz)

Additional allocation: In MDG, SWZ and TZA the band 5650-5850 MHz is also allocated to the fixed and mobile service on a primary basis.

Annex E: List of ITU Radio Regulations footnotes

5.53 Administrations authorising the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 8.3 kHz are allocated.

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

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

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

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

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

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

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

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

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

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

5.61 In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70-90 kHz and 110-130 kHz shall be subject to agreement obtained under No. **9.21** with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.

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.

5.63 SUP (WRC-97)

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

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

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

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

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

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

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

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

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

5.71 SUP (WRC-19)

5.72 SUP (WRC-12)

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

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

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

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

5.77 *Different category of service:* in Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea, the Dem. People's Rep. of Korea and Sri Lanka, the allocation of the frequency band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. In Armenia, Azerbaijan, Belarus, the Russian Federation,

Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan, the allocation of the frequency band 435-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in all the aforementioned countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the frequency band 435-495 kHz do not cause interference to reception by coast stations of transmissions from ship stations on frequencies designated for ship stations on a worldwide basis. (WRC-19)

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

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

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

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

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

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

5.81 SUP (WRC-2000)

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

5.82A SUP (WRC-12)

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)

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

5.83 SUP (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)

5.85 Not used.

5.86 In Region 2, in the band 525-535 kHz the carrier power of broadcasting stations shall not exceed 1 kW during the day and 250 W at night.

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

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

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

5.89 In Region 2, the use of the band 1 605-1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

The examination of frequency assignments to stations of the fixed and mobile services in the band 1 625-1 705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

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.

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

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

5.93 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-15)

5.94 Not used

5.95 Not used.

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

5.97 In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2 000 kHz

is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.

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

5.99 *Additional allocation:* in Saudi Arabia, Austria, Iraq, Libya, Uzbekistan, Slovakia, Romania, 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-12)

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

5.101 SUP (WRC12)

5.102 *Alternative allocation:* in Bolivia, Chile, Paraguay and Peru, the frequency band 1 850-2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC-15)

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

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

5.105 In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065-2 107 kHz shall be limited to class J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072-2 075.5 kHz are used as provided in No. **52.165**.

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

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

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

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

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

5.111 The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force

for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**.

The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ±3 kHz about the frequency. (WRC-07)

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

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

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

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

5.116 Administrations are urged to authorize the use of the band 3 155-3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3 400 kHz to suit local needs.

It should be noted that frequencies in the range 3 000 kHz to 4 000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

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

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

5.119 *Additional allocation:* in Peru, the frequency band 3 500-3 750 kHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.120 SUP (WRC-2000)

5.121 Not used.

5.122 *Alternative allocation:* in Bolivia, Chile, Ecuador, Paraguay and Peru, the frequency band 3 750-4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

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

5.124 SUP (WRC-2000)

5.125 *Additional allocation:* in Greenland, the band 3 950-4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

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

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

5.128 Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Belarus, Botswana, Burkina

Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the frequency bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-19)

5.129 SUP (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. 132A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (**WRC-12).

5. 132B *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 4 438-4 488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)

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

5. 133A *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5 250-5 275 kHz and 26 200-26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

5.133B Stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas countries and territories within the Kingdom of the Netherlands in Region 2, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC-19)

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

5.135 SUP (WRC-97)

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 authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

5.138A 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)

5.139 *Different category of service:* until 29 March 2009, in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. **5.33**). (WRC-07)

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

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

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

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

5.141C 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)

5.143A In Region 3, 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, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on 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-03)

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), Libya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, South Sudan,Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-12)

5.143D In Region 2, the band 7 350-7 400 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, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on 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-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)

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

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

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

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

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

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

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

13 360-13 410 kHz,	4 950-4 990 MHz,	102-109.5 GHz,
25 550-25 670 kHz,	4 990-5 000 MHz,	111.8-114.25 GHz,
37.5-38.25 MHz,	6 650-6 675.2 MHz,	128.33-128.59 GHz,
73-74.6 MHz in Regions 1 and 3,	10.6-10.68 GHz,	129.23-129.49 GHz,
150.05-153 MHz in Region 1,	14.47-14.5 GHz,	130-134 GHz,
322-328.6 MHz,	22.01-22.21 GHz,	136-148.5 GHz,
406.1-410 MHz,	22.21-22.5 GHz,	151.5-158.5 GHz,
608-614 MHz in Regions 1 and 3,	22.81-22.86 GHz,	168.59-168.93 GHz,
1 330-1 400 MHz,	23.07-23.12 GHz,	171.11-171.45 GHz,
1 610.6-1 613.8 MHz,	31.2-31.3 GHz,	172.31-172.65 GHz,
1 660-1 670 MHz,	31.5-31.8 GHz in Regions 1 and 3,	173.52-173.85 GHz,
1 718.8-1 722.2 MHz,	36.43-36.5 GHz,	195.75-196.15 GHz,
2 655-2 690 MHz,	42.5-43.5 GHz,	209-226 GHz,
3 260-3 267 MHz,	48.94-49.04 GHz,	241-250 GHz,
3 332-3 339 MHz,	76-86 GHz,	252-275 GHz
3 345.8-3 352.5 MHz,	92-94 GHz,	
4 825-4 835 MHz,	94.1-100 GHz,	

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

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

5.150 The following bands:

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, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary

basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-19)

5.163 *Additional allocation:* in Armenia, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-12)

5.164 *Additional allocation:* in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Eswatini, Finland, France, Gabon, Greece, Hungary, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency bands 48.5-56.5 MHz and 58-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band. (WRC-19)

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

5.166 SUP (WRC-15)

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

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

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

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

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

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

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

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

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

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

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

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

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

5.172 *Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 54-68 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)

5.173 *Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 68-72 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)

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

5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-07)

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

5.178 *Additional allocation:* in Colombia, Cuba, El Salvador, Guatemala, Guyana, Honduras and Nicaragua, the band 73-74.6 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

5.179 *Additional allocation:* in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-07)

5.180 The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons.

Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

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

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

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

5.184 SUP (WRC-07)

5.185 *Different category of service:* in the United States, the French overseas departments and communities in Region 2, Guyana and Paraguay, the allocation of the frequency band 76-88 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)

5.186 SUP (WRC-97)

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

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

5.189 Not used.

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)

5.191 Not used.

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

5.193 Not used.

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

5.195 Not used

5.196 Not used.

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

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

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

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

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

5.203 SUP (WRC-07)

5.203A SUP (WRC-07)

5.203B SUP (WRC-07)

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

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

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

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

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

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

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

5.208B[*] In the frequency bands:
137-138 MHz,
157.1875-157.3375 MHz,
161.7875-161.9375 MHz,
387-390 MHz,
400.15-401 MHz,
1 452-1 492 MHz,
1 525-1 610 MHz,
1 613.8-1 626.5 MHz,
2 655-2 690 MHz,
21.4-22 GHz,
Resolution **739 (Rev.WRC-19)** applies. (WRC-19)

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

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

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

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

5.212 *Alternative allocation:* in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Niger, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo,

[*] This provision was previously numbered as No. **5.347A**. It was renumbered to preserve the sequential order.

Rwanda, Sierra Leone, South Africa, Chad, Togo, Zambia and Zimbabwe, the frequency band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-19)

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

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

5.215 Not used.

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

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

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

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

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

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

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

Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-19)

5.222 SUP (WRC-15)

5.223 SUP (WRC-15)

5.224 SUP (WRC-97)

5.224A SUP (WRC-15)

5.224B SUP (WRC-15)

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

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

5.226 The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles **31** and **52**, and in Appendix **18**.

The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article **31** and Appendix **18**.

In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **18**).

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

However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)

5.227 SUP (WRC-12)

5.228 The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobilesatellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency

bands by systems operating in the maritime mobile service for communications shall not exceed 1W. (WRC-12)

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

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

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

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

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

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

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

5.228E The use of the automatic identification system in the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the aeronautical mobile (OR) service is limited to aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)

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

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

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

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

5.232 SUP (WRC-12)

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

5.234 SUP (WRC-12)

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

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

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

5.239 Not used.

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

5.241 In Region 2, no new stations in the radiolocation service may be authorized in the band 216-225 MHz. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

5.242 *Additional allocation:* in Canada and Mexico, the frequency band 216-220 MHz is also allocated to the land mobile service on a primary basis. (WRC-19)

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

5.244 SUP (WRC-97)

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

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

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

5.248 Not used

5.249 Not used.

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

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

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

5.253 Not used.

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

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

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

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

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

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

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

5.260 SUP (WRC-15)

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

In the frequency band 399.99-400.02 MHz, the e.i.r.p. limits as specified above shall apply after 22 November 2022 to all systems within the mobile-satellite service. Administrations are requested that their mobile-satellite service satellite links in the 399.99-400.02 MHz frequency band comply with the e.i.r.p. limits as specified above, after 22 November 2019. (WRC-19)

5.260B In the frequency band 400.02-400.05 MHz, the provisions of No. **5.A12** are not applicable for telecommand uplinks within the mobile-satellite service. (WRC-19)

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

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

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

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

5.264A In the frequency band 401-403 MHz, the maximum e.i.r.p. of any emission of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW in any 4 kHz band for geostationary systems and non-geostationary systems with an orbit of apogee equal or greater than 35 786 km.

The maximum e.i.r.p. of any emission of each earth station in the meteorologicalsatellite service and the Earth exploration-satellite service shall not exceed 7 dBW in any 4 kHz band for non-geostationary systems with an orbit of apogee lower than 35 786 km.

The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW for geostationary systems and nongeostationary systems with an orbit of apogee equal or greater than 35 786 km in the whole 401-403 MHz frequency band. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW for non-geostationary systems with an orbit of apogee lower than 35 786 km in the whole 401-403 MHz frequency band.

Until 22 November 2029, these limits shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2029, these limits shall apply to all systems within the meteorological-satellite service and the Earth exploration-satellite service operating in this frequency band. (WRC-19)

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

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

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

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

5.268 Use of the frequency band 410-420 MHz by the space research service is limited to space-to-space communication links with an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from transmitting stations of the space research service (space-to-space) in the frequency band 410-420 MHz shall not exceed -153 dB(W/m^2) for $0^o \le \delta \le 5^o$, $-153 + 0.077\ (d - 5)$ dB(W/m^2) for $5^o \le \delta \le 70^o$ and -148 dB(W/m^2) for $70^o \le \delta \le 90^o$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. In this frequency band, stations of the space research service (space-to-space) shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. **4.10** does not apply. (WRC-15)

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

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

5.271 SUP (WRC-12)

5.274 *Alternative allocation:* in Denmark, Norway, Sweden, and Chad the bands 430-432 MHz and 438-440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.(WRC12)

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

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

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.278 *Different category of service:* in Argentina, Brazil, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama, Paraguay, Uruguay and Venezuela, the allocation of the frequency band 430-440 MHz to the amateur service is on a primary basis (see No. **5.33**). (WRC-19)

5.279 *Additional allocation:* in Mexico, the frequency bands 430-435 MHz and 438-440 MHz are also allocated on a primary basis to the mobile, except aeronautical mobile, service, and on a secondary basis to the fixed service, subject to agreement obtained under No. **9.21**. (WRC-19)

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

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

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

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

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

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

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

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

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

5.286AA The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) - see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

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

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

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

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

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

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

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

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

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

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

5.292 *Different category of service:* in Argentina, Uruguay and Venezuela, the allocation of the frequency band 470-512 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)

5.293 *Different category of service:* in Canada, Chile, Cuba, the United States, Guyana, Jamaica and Panama, the allocation of the frequency bands 470-512 MHz and 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados, Canada, Chile, Cuba, the United States, Guyana, Jamaica, Mexico and Panama, the allocation of the frequency bands 470-512 MHz and 614-698 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and Ecuador, the allocation of the frequency band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)

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

5.295 In the Bahamas, Barbados, Canada, the United States and Mexico, the frequency band 470-608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-19)

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

5.296A In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470-698 MHz, or portions thereof, and in Bangladesh, Maldives and New Zealand, the frequency band 610-698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-19)

5.297 *Additional allocation:* in Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana and Jamaica, the frequency band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados and Mexico, the frequency band 512-608 MHz is also allocated to the mobile service on a primary basis, subject to agreement obtained under No. **9.21**. In Mexico, the frequency band 512-608 MHz is also allocated on a secondary basis to the fixed service (see No. **5.32**). (WRC-19)

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

5.299 Not used.

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

5.301 Not used.

5.302 SUP (WRC-12)

5.303 Not used.

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

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

5.306 *Additional allocation:* in Region 1, except in the 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.

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

5.308 *Additional allocation:* in Belize, Colombia and Guatemala, the frequency band 614-698 MHz is also allocated to the mobile service on a primary basis. Stations of the mobile service within the frequency band are subject to agreement obtained under No. **9.21**. (WRC-19)

5.308A In the Bahamas, Barbados, Belize, Canada, Colombia, the United States, Guatemala and Mexico, the frequency band 614-698 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-19)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. (WRC-19)

5.309 *Different category of service*: in El Salvador, the allocation of the frequency band 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)

5.310 SUP (WRC-97)

5.311 SUP (WRC-07)

5.311A SUP (WRC-19)

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

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

5.313 SUP (WRC-97)

5.313A The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and

Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.313B SUP (WRC-15)

5.314 SUP (WRC-15)

5.315 SUP (WRC-15)

5.316 SUP (WRC-15)

5.316A SUP (WRC-15)

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

5.317 *Additional allocation*: in Region 2 (except Brazil, the United States and Mexico), the frequency band 806-890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is intended for operation within national boundaries. (WRC-15)

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

5.318 *Additional allocation*: in Canada, the United States and Mexico, the bands 849-851 MHz and 894-896 MHz are also allocated to the aeronautical mobile service on a primary basis, for public correspondence with aircraft. The use of the band 849-851 MHz is limited to transmissions from aeronautical stations and the use of the band 894-896 MHz is limited to transmissions from aircraft stations.

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

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

5.321 SUP (WRC-07)

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

5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 862-960 MHz, in

Bulgaria the frequency bands 862-880 MHz and 915-925 MHz, and in Romania the frequency bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-19)

5.324 Not used.

5.325 *Different category of service*: in the United States, the allocation of the band 890-942 MHz to the radiolocation service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.

5.325A *Different category of service:* in Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Paraguay, Uruguay and Venezuela, the frequency band 902-928 MHz is allocated to the land mobile service on a primary basis. In Mexico, the frequency band 902-928 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Colombia, the frequency band 902-905 MHz is allocated to the land mobile service on a primary basis. (WRC-19)

5.326 *Different category of service*: in Chile, the band 903-905 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21**.

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

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

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

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

5.328AA The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to-space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution **425 (Rev.WRC-19)** shall apply. (WRC-19)

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

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

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

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

5.331 *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the frequency band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the frequency band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-19)

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

5.333 SUP (WRC-97)

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

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

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

5.336 Not used.

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

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

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

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

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

5.339A SUP (WRC-07)

5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by No. **5.422**,
10.68-10.7 GHz,	except those provided for by No. **5.483**,
15.35-15.4 GHz,	except those provided for by No. **5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations
50.2-50.4 GHz[2],	
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.

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

5.341B In Region 2, the frequency band 1 427-1 518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.341C The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1 518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service.

[2] **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)

This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

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

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

5.344 *Alternative allocation:* in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **5.343**).

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

5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine**[2], Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **761 (WRC-19)**. (WRC-19)

5.346A The frequency band 1 452-1 492 MHz is identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-19)** and Resolution **761 (Rev.WRC-19)**. The use of this frequency band by the above administrations for the implementation of IMT is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

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

5.348A In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be –150 dB(W/m^2) 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)

** The use by Palestine of the allocation to the mobile service in the frequency band 1 452-1 492 MHz identified for IMT is noted, pursuant to Resolution 99 (Rev. Busan, 2014) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

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

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

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

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

5.352 SUP (WRC-97)

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

5.353 SUP (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.) (WRC-2000)

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

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

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

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

5.357A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the 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

[*] *Note by the Secretariat:* This Resolution was revised by WRC-07.

safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-12)**[*] shall apply.) (WRC-12)

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

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

5.362B SUP (WRC-12)

5.362C SUP (WRC-12)

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

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

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

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

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

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

5.370 *Different category of service:* in Venezuela, the allocation to the radiodetermination-satellite service in the band 1 610-1 626.5 MHz (Earth-to-space) is on a secondary basis.

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

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

5.373 Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose additional constraints on earth stations operating in the maritime mobile-satellite service or maritime earth stations of the radiodetermination-satellite service operating in accordance with the Radio Regulations in the frequency band 1 610-1 621.35 MHz or on earth stations operating in the maritime mobile-satellite service operating in accordance with the Radio Regulations in the frequency band 1 626.5-1 660.5 MHz, unless otherwise agreed between the notifying administrations. (WRC-19)

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

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

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

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

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

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

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

5.379B The use of the 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/m^2) in 10 MHz and –194 dB(W/m^2) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)

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

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

systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)

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

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

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

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

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

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

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

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

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

5.388A In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-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, Jordan, Kenya, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan,

Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the frequency bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of −127 dB(W/(m2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-19)

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

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

5.389C The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 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.

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

5.390 SUP (WRC-07)

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

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

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

5.394 In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-07)

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

5.396 SUP (WRC-19)

5.397 SUP (WRC-12)

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

5.398A *Different category of service:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, the band 2 483.5-2 500 MHz is allocated on a primary basis to the radiolocation service. The radiolocation stations in these countries shall not cause harmful interference to, or claim protection from, stations of the fixed, mobile and mobile-satellite services operating in accordance with the Radio Regulations in the frequency band 2 483.5-2 500 MHz. (WRC-12

5.399 Except for cases referred to in No. **5.B118**, stations of the radiodetermination-satellite service operating in the frequency band 2 483.5-2 500 MHz for which notification information is received by the Bureau after 17 February 2012, and the service area of which includes Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, shall not cause harmful interference to, and shall not claim protection from stations of the radiolocation service operating in these countries in accordance with No. **5.A118**. (WRC-12)

5.400 SUP (WRC-12)

5.401 In Angola, Australia, Bangladesh, China, Eritrea, Eswatini, Ethiopia, India, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Togo and Zambia, the frequency band 2 483.5-2 500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. **9.21** from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information. (WRC-19)

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

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

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

5.405 SUP (WRC-12)

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

5.410 The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. No. **9.21** does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-12)

5.412 *Alternative allocation:* in , Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12

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

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

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

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

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

5.415 The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**, giving particular attention to the broadcasting-satellite service in Region 1. (WRC-07)

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

5.416 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)

5.417 SUP (WRC-2000)

5.417A SUP (WRC-15)

5.417B SUP (WRC-15)

5.417C SUP (WRC-15)

5.417D SUP (WRC-15)

5.418 *Additional allocation:* in India, the frequency band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-19)**. The provisions of No. **5.416** and Table **21-4** of Article **21** do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcastingsatellite service (sound) is subject to Resolution **539 (Rev.WRC-19)**. Geostationary broadcastingsatellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power fluxdensity at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the frequency band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

-130 dB(W/(m^2 · MHz))	for $0^o \le \theta \le 5^o$
$-130 + 0.4\ (\theta - 5)$ dB(W/(m^2 · MHz))	for $5^o < \theta \le 25^o$
-122 dB(W/(m^2 · MHz))	for $25^o < \theta \le 90^o$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of −122 dB(W/(m2 · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system.

In addition, an administration listed in this provision shall not have simultaneously two frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. (WRC-19)

5.418A In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. (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, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, , Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

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

5.424 *Additional allocation:* in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

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

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

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

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

5.428 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.429 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, New Zealand, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-19)

5.429A *Additional allocation*: in Angola, Benin, Botswana, Burkina Faso, Burundi, Djibouti, Eswatini, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-19)

5.429B In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Eswatini, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.429C *Different category of service*: in Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Argentina, Brazil, the Dominican Republic, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is also allocated to the fixed service on a primary basis. Stations in the fixed and mobile services operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-19)

5.429D In the following countries in Region 2: Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. This use in Argentina, Paraguay and Uruguay is subject to the application of No. **9.21**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.429E *Additional allocation*: in Papua New Guinea, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating

in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)

5.429F In the following countries in Region 3: Cambodia, India, Indonesia, Lao P.D.R., Pakistan, the Philippines and Viet Nam, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. **9.21** with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

5.430 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.430A The allocation of the frequency band 3 400-3 600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. **9.21**. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. **9.17** and **9.18** shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed -154.5 dB(W/(m^2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

5.431 *Additional allocation:* in Germany, the frequency band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-19)

5.431A In Region 2, the allocation of the frequency band 3 400-3 500 MHz to the mobile, except aeronautical mobile, service on a primary basis is subject to agreement obtained under No. **9.21**. (WRC-15)

5.431B In Region 2, the frequency band 3 400-3 600 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. 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 an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed +154.5 dB(W/(m^2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), 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, including IMT systems, in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

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

5.432A In Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the frequency band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

5.432B *Different category of service:* in Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, India, Indonesia, Iran (Islamic Republic of), Malaysia, New Zealand, the Philippines, Singapore and Thailand, the frequency band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

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

5.433A In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, New Zealand, Pakistan, the Philippines and the Dem. People's Rep. of Korea, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power fluxdensity (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the

terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

5.434 In Canada, Chile, Colombia, Costa Rica, El Salvador, the United States and Paraguay, the frequency band 3 600-3 700 MHz, or portions thereof, is identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. 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 an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), 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, including IMT systems, in the frequency band 3 600-3 700 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

5.436 Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **424 (WRC-15)**. (WRC-15)

5.437 Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4 200-4 400 MHz on a secondary basis. (WRC-15)

5.438 Use of the frequency band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. (WRC-15)

5.439 *Additional allocation:* in Iran (Islamic Republic of), the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis. (WRC-12)

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

5.440A In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 400-4 940 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of these bands by other mobile service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-07)

5.441 The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from

geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.441A In Brazil, Paraguay and Uruguay, the frequency band 4 800-4 900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service. Such use shall be in accordance with Resolution **223 (Rev.WRC-19)**. (WRC-19)

5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed −155 dB(W/(m2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This pfd criterion is subject to review at WRC-23. Resolution **223 (Rev.WRC-19)** applies. This identification shall be effective after WRC-19. (WRC-19)

5.442 In the frequency bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), and in Australia, the frequency band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to the fixed service. (WRC-15)

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

5.443A SUP (WRC-03)

5.443AA In the frequency bands 5 000-5 030 MHz and 5 091-5 150 MHz, the aeronautical mobile-satellite (R) service is subject to agreement obtained under No. **9.21**. The use of these bands by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)

5.443B In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed -124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the frequency band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the frequency band 5 010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution **741 (Rev.WRC-15)**. (WRC-15)

5.443C The use of the frequency band 5 030-5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030-5 091 MHz shall be limited to protect RNSS system downlinks

in the adjacent 5 010-5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of −75 dBW/MHz in the frequency band 5 010-5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)

5.443D In the frequency band 5 030-5 091 MHz, the aeronautical mobile-satellite (R) service is subject to coordination under No. **9.11A**. The use of this frequency band by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)

5.444 The frequency band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the frequency band 5 030-5 091 MHz, the requirements of this system shall have priority over other uses of this frequency band. For the use of the frequency band 5 091-5 150 MHz, No. **5.444A** and Resolution **114 (Rev.WRC-15)** apply. (WRC-15)

5.444A The use of the allocation to the fixed-satellite service (Earth-to-space) in the frequency band 5 091-5 150 MHz is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the frequency band 5 091-5 150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution **114 (Rev.WRC-15)**. Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service. (WRC-15)

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

- systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution **748 (Rev.WRC-19)**;
- aeronautical telemetry transmissions from aircraft stations (see No. **1.83**) in accordance with Resolution **418 (Rev.WRC-19)**. (WRC-19)

5.446 *Additional allocation:* in the countries listed in No. **5.369**, the frequency band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. **5.369** and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodeterminationsatellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power fluxdensity at the Earth's surface shall in no case exceed -159 dB(W/m^2) in any 4 kHz band for all angles of arrival. (WRC-15)

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 (Rev.WRC-19)**. (WRC-19)

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

5.446C *Additional allocation:* in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia), the frequency band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. **1.83**), in accordance with Resolution **418 (Rev.WRC-19)**. These stations shall not claim protection from other stations operating in accordance with Article **5**. No. **5.43A** does not apply. (WRC-19)

5.446D *Additional allocation:* in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. **1.83**), in accordance with Resolution **418 (Rev.WRC-19**). (WRC-19)

5.447 *Additional allocation:* in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the frequency band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. In this case, the provisions of Resolution **229 (Rev.WRC-19)** do not apply. (WRC-19)

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

5.447B *Additional allocation*: the band 5 150-5 216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. **9.11A**. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150-5 216 MHz shall in no case exceed –164 dB(W/m^2) in any 4 kHz band for all angles of arrival.

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

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

5.447E *Additional allocation:* The frequency band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this frequency band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613-0. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. **5.43A** do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC-15)

5.447F In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). The radiolocation service, the Earth exploration-satellite service (active) and the space research service (active) shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-19)**. (WRC-19)

5.448 *Additional allocation:* in Kyrgyzstan, Romania and Turkmenistan, the frequency band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

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

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

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

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

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

5.450 *Additional allocation:* in Austria, Azerbaijan, Iran (Islamic Republic of), Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

5.450A In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. The radiodetermination services shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution **229 (Rev.WRC-19)**. (WRC-19)

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

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

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

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of Korea, Singapore, Sri Lanka, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229** (**Rev.WRC-12**) do not apply. In addition, in Afghanistan, Angola, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Dem. Rep. of the Congo, Fiji, Ghana, Kiribati, Lesotho, Malawi, Maldives, Mauritius, Micronesia, Mongolia, Mozambique, Myanmar, Namibia, Nauru, New Zealand, Papua New Guinea, Rwanda, Solomon Islands, South Sudan, South Africa, Tonga, Vanuatu, Zambia and Zimbabwe, the band 5 725-5 850 MHz is allocated to the fixed service on a primary basis, and stations operating in the fixed service shall not cause harmful interference to and shall not claim protection from other primary services in the frequency band. (WRC-19)

5.454 *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, , Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.456 SUP (WRC-15)

5.457 In Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria, the allocation to the fixed service in the bands 6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to- HAPS direction) may also be used by gateway links for high-altitude platform stations (HAPS) within the territory of these countries. Such use is limited to operation in HAPS gateway links and shall not cause harmful interference to, and shall not claim protection from, existing services, and shall be in compliance with Resolution **150 (WRC-12)**. Existing services shall not be constrained in future development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. (WRC-12)

5.457A In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (WRC-03)**. In the frequency band 5 925-6 425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of 1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution **902 (WRC-03)** shall apply. (WRC-15)

5.457B In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902 (WRC-03)** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902 (WRC-03)**. (WRC-15)

5.457C In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), the frequency band 5 925-6 700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, or claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this frequency band by other mobile service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-15)

5.458 In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 025 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 SUP (WRC-15)

5.459 *Additional allocation:* in the Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. In the frequency band 7 190-7 235 MHz, with respect to the Earth exploration satellite service (Earth-to-space), No. **9.21** does not apply. (WRC-15)

5.460 No emissions from space research service (Earth-to-space) systems intended for deep space shall be effected in the frequency band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply. (WRC-15)

5.460A The use of the frequency band 7 190-7 250 MHz (Earth-to-space) by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of spacecraft. Space stations operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 250 MHz shall not claim protection from existing and future stations in the fixed and mobile services, and No. **5.43A** does not apply. No. **9.17** applies. Additionally, to ensure protection of the existing and future deployment of fixed and mobile services, the location of earth stations supporting spacecraft in the Earth exploration-satellite service in non-geostationary orbits or geostationary orbit shall maintain a separation distance of at least 10 km and 50 km, respectively, from the respective border(s) of neighbouring countries, unless a shorter distance is otherwise agreed between the corresponding administrations. (WRC-15)

5.460B Space stations on the geostationary orbit operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the space research service, and No. **5.43A** does not apply. (WRC-15)

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

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

5.461AA The use of the frequency band 7 375-7 750 MHz by the maritime mobile-satellite service is limited to geostationary-satellite networks. (WRC-15)

5.461AB In the frequency band 7 375-7 750 MHz, earth stations in the maritime mobile-satellite service shall not claim protection from, nor constrain the use and development of, stations in the fixed and mobile, except aeronautical mobile, services. No. **5.43A** does not apply. (WRC-15)

5.461B The use of the band 7 750-7 900 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems. (WRC-12)

5.462 SUP (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:

-135 dB(W/m^2) in a 4 kHz band	for	$0^\circ \le \theta < 5^\circ$
$-135 + 0.5\,(\theta - 5)$ dB(W/m^2) in a 4 kHz band	for	$5^\circ \le \theta < 25^\circ$
-125 dB(W/m^2) in a 1 MHz band	for	$25^\circ \le \theta \le 90^\circ$ (WRC-12)

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

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

5.466 *Different category of service:* in , Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. **5.32**). (WRC-12)

5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Chad, Togo, Tunisia and Yemen, the frequency band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-19)

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-12)

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

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

5.471 *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the frequency bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-15)

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

5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-07)

5.473A *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-19)

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

5.474A The use of the frequency bands 9 200-9 300 MHz and 9 900-10 400 MHz by the Earth exploration-satellite service (active) is limited to systems requiring necessary bandwidth greater than 600 MHz that cannot be fully accommodated within the frequency band 9 300-9 900 MHz. Such use is subject to agreement to be obtained under No. **9.21** from Algeria, Saudi Arabia, Bahrain, Egypt, Indonesia, Iran (Islamic Republic of), Lebanon and Tunisia. An administration that has not replied under No. **9.52** is considered as not having agreed to the coordination request. In this case, the notifying administration of the satellite system operating in the Earth exploration-satellite service (active) may request the assistance of the Bureau under Sub-Section IID of Article **9**. (WRC-15)

5.474B Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2066-0. (WRC-15)

5.474C Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2065-0. (WRC-15)

5.474D Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime radionavigation and radiolocation services in the frequency band 9 200-9 300 MHz, the radionavigation and radiolocation services in the frequency band 9 900-10 000 MHz and the radiolocation service in the frequency band 10.0-10.4 GHz. (WRC-15)

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

5.475A The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)

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

5.476 SUP (WRC-07)

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

5.477 *Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. **5.33**). (WRC-15)

5.478 *Additional allocation:* in Azerbaijan, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the frequency band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-19)

5.478A The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band. (WRC-07)

5.478B In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis. (WRC-07)

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

5.480 *Additional allocation:* in Argentina, Brazil, Chile, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Paraguay, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Peru and Uruguay, the frequency band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Colombia, Costa Rica, Mexico and Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.481 *Additional allocation:* in Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica, the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

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

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

5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China Colombia, Korea (Rep. of), Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of) Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem People's Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the frequency band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-19)

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

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

the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.484B Resolution **155 (WRC-15)** shall apply. (WRC-15)

5.485 In Region 2, in the band 11.7-12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

5.486 *Different category of service:* in the United States, the allocation of the frequency band 11.7-12.1 GHz to the fixed service is on a secondary basis (see No. **5.32**). (WRC-15)

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

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

5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. **9.14** for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-03)

5.489 *Additional allocation:* in Peru, the band 12.1-12.2 GHz is also allocated to the fixed service on a primary basis.

5.490 In Region 2, in the band 12.2-12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix **30**.

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

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

5.494 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

5.495 *Additional allocation:* in Greece, Monaco, Montenegro, Uganda and Tunisia, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-19)

5.496 *Additional allocation:* in Austria, Azerbaijan, Kyrgyzstan and Turkmenistan, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Table **21-4** of Article **21**, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (WRC-2000)

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

5.498 SUP (WRC-97)

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

5.499 *Additional allocation:* in Bangladesh, and India , the band 13.25-14 GHz is also allocated to the fixed service on a primary basis. In Pakistan, the band 13.25-13.75 GHz is allocated to the fixed service on a primary basis. (WRC 12)

5.499A The use of the frequency band 13.4-13.65 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary-satellite systems and is subject to agreement obtained under No. **9.21** with respect to satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015. (WRC-15)

5.499B Administrations shall not preclude the deployment and operation of transmitting earth stations in the standard frequency and time signal-satellite service (Earth-to-space) allocated on a secondary basis in the frequency band 13.4-13.65 GHz due to the primary allocation to FSS (space-to-Earth). (WRC-15)

5.499C The allocation of the frequency band 13.4-13.65 GHz to the space research service on a primary basis is limited to:

– satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015,
– active spaceborne sensors,
– satellite systems operating in the space research service (space-to-Earth) to relay data from space stations in the geostationary-satellite orbit to associated earth stations.

Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)

5.499D In the frequency band 13.4-13.65 GHz, satellite systems in the space research service (space-to-Earth) and/or the space research service (space-to-space) shall not cause harmful interference to, nor claim protection from, stations in the fixed, mobile, radiolocation and Earth exploration-satellite (active) services. (WRC-15)

5.499E In the frequency band 13.4-13.65 GHz, geostationary-satellite networks in the fixed-satellite service (spaceto- Earth) shall not claim protection from space stations in the Earth exploration-satellite service (active) operating in accordance with these Regulations, and No. **5.43A** does not apply. The provisions of No. **22.2** do not apply to the Earth exploration-satellite service (active) with respect to the fixed-satellite service (space-to-Earth) in this frequency band. (WRC-15)

5.500 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait,

Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.501 *Additional allocation:* in Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-12)

5.501A The allocation of the frequency band 13.65-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)

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

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

– –115 dB(W/(m^2 · 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/(m^2 · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained.

For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)

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

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

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

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

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

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

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

Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)

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

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

5.504B Aircraft earth stations operating in the aeronautical mobile-satellite service in the frequency band 14-14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643-0, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz frequency band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-15)

5.504C In the frequency band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Nigeria, Oman, the Syrian Arab Republic and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)

5.505 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Botswana, Brunei, Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Viet Nam and Yemen, the frequency band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

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

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

5.506B Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus and Malta, within the minimum distance given in Resolution **902 (WRC-03)** from these countries. (WRC-15)

5.508 *Additional allocation:* in Germany, France, Italy, Libya, North Macedonia and the United Kingdom, the frequency band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-19)

5.508A In the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the

aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)

5.509 SUP (WRC-07)

5.509A In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)

5.509B The use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **164 (WRC-15)** by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service is limited to geostationary-satellites. (WRC-15)

5.509C For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **164 (WRC-15)** by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service, the fixed-satellite service earth stations shall have a minimum antenna diameter of 6 m and a maximum power spectral density of -44.5 dBW/Hz at the input of the antenna. The earth stations shall be notified at known locations on land. (WRC-15)

5.509D Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in the frequency bands 14.5-14.75 GHz (in countries listed in Resolution **163 (WRC-15)**) and 14.5-14.8 GHz (in countries listed in Resolution **164 (WRC-15)**), it shall ensure that the power flux-density produced by this earth station does not exceed -151.5 dB(W/(m^2 · 4 kHz)) produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (WRC-15)

5.509E In the frequency bands 14.50-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.50-14.8 GHz in countries listed in Resolution **164 (WRC-15)**, the location of earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall maintain a separation distance of at least 500 km from the border(s) of other countries unless shorter distances are explicitly agreed by those administrations. No. **9.17** does not apply. When applying this provision, administrations should consider the relevant parts of these Regulations and the latest relevant ITU-R Recommendations. (WRC-15)

5.509F In the frequency bands 14.50-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.50-14.8 GHz in countries listed in Resolution **164 (WRC-15)**, earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall not constrain the future deployment of the fixed and mobile services. (WRC-15)

5.509G The frequency band 14.5-14.8 GHz is also allocated to the space research service on a primary basis. However, such use is limited to the satellite systems operating in the space research service (Earth-to-space) to relay data to space stations in the geostationary-satellite orbit from associated earth stations. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services and in the fixed satellite service limited to feeder links for the broadcasting-satellite service and associated space operations functions using the guardbands under Appendix **30A** and feeder links for the broadcasting-satellite service in Region 2. Other uses of this frequency band by the space research service are on a secondary basis. (WRC-15)

5.510 Except for use in accordance with Resolution **163 (WRC-15)** and Resolution **164 (WRC-15)**, the use of the frequency band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. Uses other than feeder links for the broadcasting-satellite service are not authorized in Regions 1 and 2 in the frequency band 14.75-14.8 GHz. (WRC-15)

5.511 *Additional allocation:* in Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, , 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-12)

5.511A Use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**. (WRC-15)

5.511C Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340-0. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. **4.10** applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation ITU-R S.1340-0. (WRC-15)

5.511D SUP (WRC-12)

5.511E In the frequency band 15.4-15.7 GHz, stations operating in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the aeronautical radionavigation service. (WRC-12)

5.511F In order to protect the radio astronomy service in the frequency band 15.35-15.4 GHz, radiolocation stations operating in the frequency band 15.4-15.7 GHz shall not exceed the power flux-density level of −156 dB(W/m^2) in a 50 MHz bandwidth in the frequency band 15.35-15.4 GHz, at any radio astronomy observatory site for more than 2 per cent of the time. (WRC-12)

5.512 *Additional allocation:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Montenegro, Nepal, Nicaragua, Niger, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.513 *Additional allocation:* in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **5.512**.

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

5.514 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Sudan and South Sudan, the frequency band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-15)

5.515 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:

17.3-17.7 GHz (space-to-Earth) in Region 1,
18.3-19.3 GHz (space-to-Earth) in Region 2,
19.7-20.2 GHz (space-to-Earth) in all Regions,
39.5-40 GHz (space-to-Earth) in Region 1,
40-40.5 GHz (space-to-Earth) in all Regions,
40.5-42 GHz (space-to-Earth) in Region 2,
47.5-47.9 GHz (space-to-Earth) in Region 1,
48.2-48.54 GHz (space-to-Earth) in Region 1,
49.44-50.2 GHz (space-to-Earth) in Region 1,
and
27.5-27.82 GHz (Earth-to-space) in Region 1,
28.35-28.45 GHz (Earth-to-space) in Region 2,
28.45-28.94 GHz (Earth-to-space) in all Regions,
28.94-29.1 GHz (Earth-to-space) in Region 2 and 3,
29.25-29.46 GHz (Earth-to-space) in Region 2,
29.46-30 GHz (Earth-to-space) in all Regions,
48.2-50.2 GHz (Earth-to-space) in Region 2.

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

5.517 In Region 2, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations. (WRC-07)

5.517A The operation of earth stations in motion communicating with geostationary fixed-satellite service space stations within the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) shall be subject to the application of Resolution **169 (WRC-19)**. (WRC-19)

5.518 SUP (WRC-07)

5.519 *Additional allocation:* the bands 18-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)

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

5.521 *Alternative allocation:* in the United Arab Emirates and Greece, the frequency band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-15)

5.522 SUP (WRC-2000)

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)

5.523 SUP (WRC-2000)

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

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

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

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

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

5.524 *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Tunisia, the frequency band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the frequency band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the frequency band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter frequency band. (WRC-15)

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

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

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

5.527A The operation of earth stations in motion communicating with the FSS is subject to Resolution **156 (WRC-15)**. (WRC-15)

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

5.529 The use of the bands 19.7-20.1 GHz and 29.5-29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. **5.526**.

5.530 SUP (WRC-12)

5.530A Unless otherwise agreed between the administrations concerned, any station in the fixed or mobile services of an administration shall not produce a power flux-density in excess of -120.4 dB(W/(m2 · MHz)) at 3 m above the ground of any point of the territory of any other administration in Regions 1 and 3 for more than 20% of the time. In conducting the calculations, administrations should use the most recent version of Recommendation ITU-R P.452 (see also the most recent version of Recommendation ITU-R BO.1898). (WRC-15)

5.530B In the band 21.4-22 GHz, in order to facilitate the development of the broadcasting satellite service, administrations in Regions 1 and 3 are encouraged not to deploy stations in the mobile service and are encouraged to limit the deployment of stations in the fixed service to point to-point links. (WRC-12)

5.530C SUP (WRC-15)

5.530D SUP (WRC-19)

5.530E The allocation to the fixed service in the frequency band 21.4-22 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction, and shall be in accordance with the provisions of Resolution **165 (WRC-19)**. (WRC-19)

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

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

5.532A The location of earth stations in the space research service shall maintain a separation distance of at least 54 km from the respective border(s) of neighbouring countries to protect the existing and future deployment of fixed and mobile services unless a shorter distance is otherwise agreed between the corresponding administrations. Nos. **9.17** and **9.18** do not apply. (WRC 12)

5.532AA The allocation to the fixed service in the frequency band 24.25-25.25 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction and shall be in accordance with the provisions of Resolution **166 (WRC-19)**. (WRC-19)

5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **242 (WRC-19)** applies. (WRC-19)

5.532B Use of the band 24.65-25.25 GHz in Region 1 and the band 24.65-24.75 GHz in Region 3 by the fixed-satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5m. (WRC-12)

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

5.534 SUP (WRC-03)

5.534A The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution **166 (WRC-19)**. Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.25-27.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore, the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. (WRC-19)

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

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

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

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution **242 (WRC-19)** applies. (WRC-19)

5.536B In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Sudan, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution **242 (WRC-19)** applies. (WRC-19)

5.536C In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-12)

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

5.537A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-19)**. (WRC-19)

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

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

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

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

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

5.542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (WRC-12)

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

5.543A SUP (WRC-19)

5.543B The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of

the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **167 (WRC-19)**. (WRC-19)

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

5.545 *Different category of service:* in Armenia, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-07)

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the frequency band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-19)

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution **75 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

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

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

5.547C *Alternative allocation*: in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-03)

5.547D *Alternative allocation*: in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. (WRC-97)

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

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

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, , Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

5.549A In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed −73.3 dB(W/m^2) in this band. (WRC-03)

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, , Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

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

5.550B The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. **5.516B**), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution **243 (WRC-19)** applies. (WRC-19)

5.550C The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service but not with non-geostationary-satellite systems in other services. Resolution **770 (WRC-19)** shall also apply, and No. **22.2** shall continue to apply. (WRC-19)

5.550D The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. **5.43A** does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **168 (WRC-19)**. (WRC-19)

5.550E The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile-satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to-Earth) is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite and mobile-satellite services but not with non-geostationary-satellite systems in other services. No. **22.2** shall continue to apply for non-geostationary-satellite-systems. (WRC-19)

5.551B SUP (WRC-2000)

5.551C SUP (WRC-2000)

5.551D SUP (WRC-2000)

5.551E SUP (WRC-2000)

5.551F *Different category of service*: in Japan, the allocation of the band 41.5-42.5 GHz to the mobile service is on a primary basis (see No. **5.33**). (WRC-97)

5.551G SUP (WRC-03)

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

- 230 dB(W/m^2) in 1 GHz and –246 dB(W/m^2) 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/m^2) 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.1631-0 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{min} of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information).

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

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

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

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-15)

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

– 137 dB(W/m^2) in 1 GHz and –153 dB(W/m^2) 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/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

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

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

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

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

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

5.552A The allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by HAPS shall be in accordance with the provisions of Resolution **122 (Rev.WRC-19)**. (WRC-19)

5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not

cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **244 (WRC-19**) applies. (WRC-19)

5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (WRC-19)** applies. s

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. (WRC-2000)

5.555A SUP (WRC-03)

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/m^2) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

5.555C The use of the frequency band 51.4-52.4 GHz by the fixed-satellite service (Earth-to-space) is limited to geostationary-satellite networks. The earth stations shall be limited to gateway earth stations with a minimum antenna diameter of 2.4 metres. (WRC-19)

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

5.556A Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –147 dB(W/(m^2 □ 100 MHz)) for all angles of arrival. (WRC-97)

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

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

5.557A 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/(m^2 □ 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)

5.559A SUP (WRC-07)

5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (WRC-19)** applies. (WRC-19)

5.559B The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. **4.10** do not apply. (WRC-15)

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

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

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

5.561B In Japan, use of the band 84-86 GHz, by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit. (WRC-2000)

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

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

5.562B In the bands 105-109.5 GHz, 111.8-114.25 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-19)

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

5.562D *Additional allocation*: In Korea (Rep. of), the frequency bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis. Radio astronomy stations in Korea (Rep. of) operating in the frequency bands referred to in this footnote shall not claim protection from, or constrain the use and development of, services in other countries operating in accordance with the Radio Regulations. (WRC-15)

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

5.562F SUP (WRC-19)

5.562G SUP (WRC-19)

5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed −144 dB(W/(m2 ⋅ MHz)) for all angles of arrival. (WRC-2000)

5.563 SUP (WRC-03)

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)

5.564 SUP (WRC-2000)

5.564A For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz:

The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications.

The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution **731 (Rev.WRC-19)**.

In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis in accordance with Resolution **731 (Rev.WRC-19)**.

The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-19)

5.565 The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service applications:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from

harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-12)

Annex F: List of acronyms

AIS	Automatic Identification System
BFWA	Broadband Fixed Wireless Access
BSS	Broadcasting Satellite Service
BWA	Broadband Wireless Access
CB	Citizen Band
CEPT	European Conference of Postal and Telecommunications Administrations
CRASA	Communications Regulators' Association of Southern Africa
DEC	Decision (European documents)
DECT	Digital Enhanced Cordless Telecommunication
DRM	Digital Radio Mondiale
DSC	Digital Communication System
DVB-T	Terrestrial Digital Video Broadcasting
ECC	Electronic Communications Committee
EESS	Earth Exploration-Satellite Service
ENG	Electronic News Gathering
EPIRB	Emergency Position-Indicating Radiobeacon
ERC	European Research Council
E-to-s	Earth-to-space direction
FM	Frequency Modulation
FSS	Fixed-Satellite Service
FWA	Fixed Wireless Access
GE75	Geneva 1975 Agreement
GE85	Geneva 1985 Agreement
GHz	GigaHertz
GLONASS	Global Navigation Satellite System
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System

HAPS	High Altitude Platform Systems
HDFS	High Density Fixed Service
HDFSS	High Density Fixed-Satellite Service
HDTV	High Definition Television
HF	High Frequency
ICT	Information and Communications Technologies
ILS	Instrument Landing System/s
IMO	International Maritime Organisation
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical Networks
ITU	International Telecommunications Union
ITU-RR	International Telecommunications Union Radio Regulations
kHz	Kilohertz
LN	Lesotho National
LTE	Long Term Evolution
MHz	MegaHertZ
MLS	Microwave Landing System
MMS	Multimedia Messaging Service
MSI	Maritime Safety Information
MSS	Mobile-Satellite Service
MWS	Multimedia Wireless System
MW	Medium Wave
NATO	North Atlantic Treaty Organisation
NAVDAT	Navigational Data (the system name)
NAVTEX	Navigational Telex (the system name)
NBDP	Narrow Band Direct Printing
NOAA	National Oceanic and Atmospheric Administration
NRA	National Regulatory Authority
OB	Outside Broadcasting
(OR)	Off-Route
PAMR	Public Access Mobile Radio
PMR	Public Mobile Radio
PPDR	Public Protection and Disaster Relief
PTMP	Point to Multi Point
PTP	Point to Point

(R)	Route
RA	Radiocommunication Assembly
REC	Regional Economic Communities
RFID	Radio Frequency Identification
RFSAP	Radio Frequency Spectrum Allocation Plan
RLANS	Radio Local Area Network System
RR	ITU Radio Regulations
RTTT	Road Transport & Traffic Telematics
S-DAB	Satellite Digital Audio Broadcasting
SADC	Southern African Development Community
s-to-E	space-to-Earth direction
SNG	Satellite News Gathering
SRD	Short Range Devices
T-DAB	Terrestrial Digital Audio Broadcasting
TV	Television
VOR	VHF Omni-directional Range
VSAT	Very Small Aperture Terminal
WAS	Wireless Access System
WRC	World Radiocommunications Conference

Annex G: SADC harmonised HF cross-border frequencies

The following thirteen (13) HF frequencies are harmonised in all SADC countries and is used for mobile communications (e.g. long haul trucks).

5170 kHz; 5330 kHz; 5365 kHz

7479 kHz; 7650 kHz; 7700 kHz

10 310 kHz; 10 440 kHz

11 140 kHz; 11 143.5 kHz

14 468 kHz; 14 590 kHz; 14 945 kHz