AFRICAN TELECOMMUNICATIONS UNION

African Spectrum Allocation Plan

(AfriSAP)

8.3 kHz to 3 000 GHz

2nd Edition

July 2025

Acknowledgement

This plan was based on the current ITU RR Region 1 Allocation 2024 edition.

List of Acronyms/Abbreviations

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
DD	Digital Dividend
DEC	Decision (European documents)
DECT	Digital Enhanced Cordless Telecommunication
DRM	Digital Radio Mondiale
DSC	Digital Selective Calling
DVB-T	Terrestrial Digital Video Broadcasting
ECC	Electronic Communications Committee (European)
EESS	Earth Exploration-Satellite Service
ENG	Electronic News Gathering
EPIRB	Emergency Position-Indicating Radio Beacon
ERC	European Radiocommunications Committee
E-to-s	Earth-to-space direction
FM	Frequency Modulation
FSS	Fixed-Satellite Service
FWA	Fixed Wireless Access
GE75	Geneva 1975 Agreement
GE84	Geneva 1984 Agreement
GE06	Geneva 2006 Agreement
GLONASS	Global Navigation Satellite System
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
HAPS	High Altitude Platform Stations
HDFS	High Density Fixed Service
HDFSS	High Density Fixed-Satellite Service
HDTV	High Definition Television
HF	High Frequency

ILS	Instrument Landing System
IMO	International Maritime Organisation
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical
ITU	International Telecommunication Union
MLS	Microwave Landing System
MSI	Maritime Safety Information
MSS	Mobile-Satellite Service
MWS	Multimedia Wireless System
NATO	North Atlantic Treaty Organisation
NAVTEX	System for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy
OB	Outside Broadcasting
(OR)	Off-Route
PAMR	Public Access Mobile Radio
PMR	Professional Mobile Radio, Private Mobile Radio
PPDR	Public Protection and Disaster Relief
(R)	Route
RA	Radio Astronomy
REC	Recommendation
RFID	Radio Frequency Identification
RLAN	Radio Local Area Network System
RR	ITU Radio Regulations
RTTT	Road Transport & Traffic Telematics
S-DAB	Satellite Digital Audio Broadcasting
s-to-E	space-to-Earth direction
SNG	Satellite News Gathering
SRD	Short Range Device
T-DAB	Terrestrial Digital Audio Broadcasting
TV	Television
VOR	VHF Omni-directional Range
VSAT	Very Small Aperture Terminal
WAS	Wireless Access System
WRC	World Radiocommunication Conference

1. INTRODUCTION

The AfriSAP is a key instrument for promoting harmonised spectrum usage across the African region. The African Union (AU) Vision is: "*An integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the global arena*". The African Telecommunications Union (ATU) being the specialised institution of the AU in the field of telecommunications/ICTs, developed this plan as a contribution towards to realization of the above AU vision.

The 1st edition of the African Spectrum Allocation Plan (AfriSAP) was initiated following the World Radiocommunications Conference (WRC) 2019.

This second edition of AfriSAP follows WRC-2023 and aligns with the 2024 edition of the Radio Regulations.

The African spectrum Allocation Plan (AfriSAP) serves as a strategic framework for managing and harmonising Radio frequency spectrum allocation and usage across the African Continent.

The expected outcome of AfriSAP is maximized socio-economic benefit from the efficient and effective utilisation of the radio spectrum resources including orbital resources to the people of Africa through harmonised use.

AfriSAP aims to serve as a reference for African Countries in developing their National radio frequency spectrum Allocation Plans. However, each country, in exercising its sovereignty, remains free to establish its own frequency allocation plan based on its national priorities and considerations.

ATU in its Strategic Plan 2019 to 2022 period, provided for the development of the 1st edition of AfriSAP pursuant to its ***statutory objectives (a)*** "*to promote the development and adoption of appropriate African telecommunications policy and regulatory frameworks*"; and ***(i)*** "*to harmonize the actions of Member States and Associate Members in the telecommunications sector*", as well as, strategic objective on "*promotion of the harmonized and rational planning and use of radio spectrum and orbital resources in order to maximize its benefits"*, under Pillar 1 of the said plan: "*promotion of Enabling Environment for Development and Sustainability of Digital Economies*".

The update of the 1st edition of AfriSAP to yield the 2nd edition was provided for in the Strategic Plan 2023 to 2027.

2. SCOPE

AfriSAP covers the frequency range 8.3 kHz – 3 000 GHz table, based on the 2024 ITU Radio Regulations with respect to Region 1.

This Africa Spectrum Allocation Plan (AfriSAP) document includes table of common Spectrum Allocations and Applications, basic conditions necessary to guide Regulators, relevant applicable footnotes, typical applications, and additional information where applicable. The table of Spectrum Allocations and Applications was based on ITU Region 1 allocations.

One key tool towards promoting the harmonized usage of spectrum across a given region is a common spectrum allocation plan which acts as a reference for sub-regional plans as well as national plans.

The 2nd edition of the African Spectrum Allocation Plan (AfriSAP) is based on the RR edition 2024[1] of the ITU Radio Regulations (RR) and it shall be revised or updated after every World Radiocommunications Conference (WRC). It also includes the actions established on planning and harmonizing Spectrum in Africa.

Specifically, the expected outcome of AfriSAP is maximized benefit of radio spectrum resources including orbital resources to the people of Africa via prudent use of the resources by way of harmonization of use.

AfriSAP would like to be a reference, for African Countries National Allocation Plan. However, any African country, in the name of its sovereignty, is free to establish its national frequency allocation plan taking into account its own references.

3. PURPOSES AND OBJECTIVES

The objectives of developing the AfriSAP include:

1. Key to optimised, rational and prudent use of the radio spectrum is its harmonized which promotes a single digital market, investment and economies of scale, resulting into low cost of radio communications equipment.Harmonisation also contributes to the mitigation of harmful interference among countries and systems. Furthermore, harmonized usage of spectrum facilitates effective cross border coordination and future spectrum re-allocation (migration or re-farming of spectrum). The AfriSAP could also serve as a tool for developing African Common Proposals (AfCPs) for future WRCs, as well as recommendations and reports.
2. To ensure that African spectrum policies align with RR and global standards while addressing regional needs

[1] ITU Radio Regulations are the international treaty governing the use of the radio-frequency spectrum and geostationary-satellite and non-geostationary-satellite orbits. The World Radiocommunications Conference (WRCs) revises Radio Regulations after every three or four years.

4. THE ITU RADIO REGIONS

ITU-R divides the World into three Regions; Region 1, Region 2 and Region 3 mainly for administrative and rational reasons. This division is largely based on the historical commonalities in the spectrum usage across these regions. The map below depicts the three Regions:

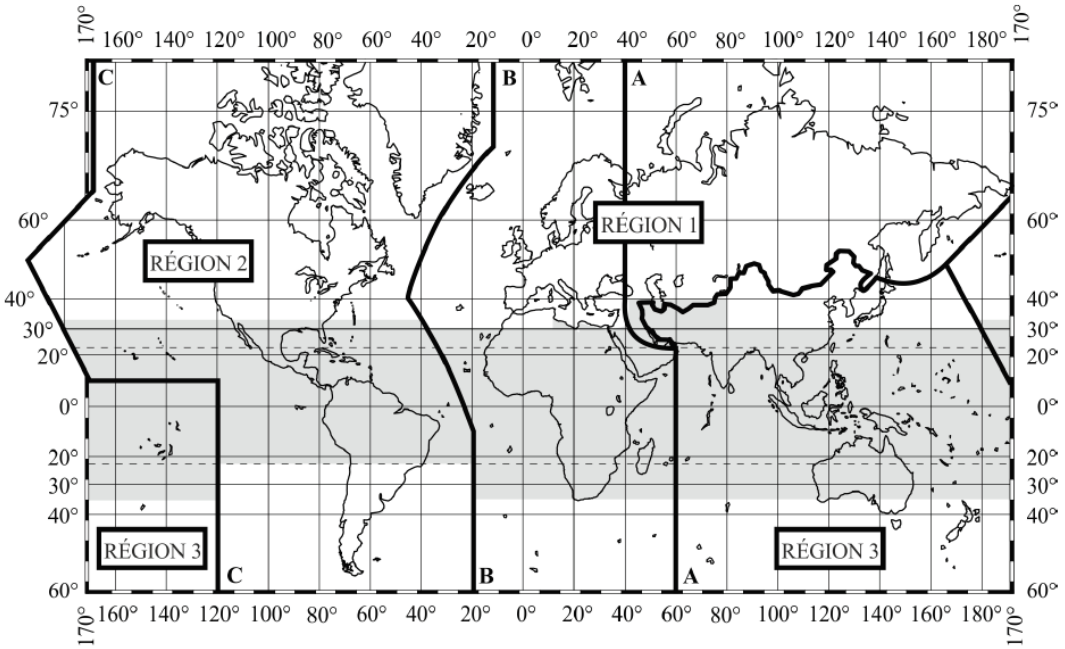

Figure 1: ITU Radio Regions and the dividing lines between them[2]

Note:

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

ii. **Region 2** covers the area limited on the east by line B and on the west by line C.

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

[2] RR Edition 2024.

5. THE ATU SUB-REGIONS

Reflected below are some of the ATU sub-regions based on substantive political African sub-regional groups. These are **EAC**, **ECCAS**, **ECOWAS**, and **SADC** as per their official websites on the links below:

i. AICTO (North) >> https://www.aicto.org/
ii. EAC (East) >> https://www.eac.int/eac-partner-states
iii. ECOWAS (West) >> https://www.ecowas.int/member-states/
iv. ECCAS (Central) >> https://ceeac-eccas.org/
v. SADC (South) >> https://www.sadc.int/member-states/

6. REVISION

AfriSAP and its annexes will be updated no later than one year after each WRC on the basis of revised applications and standards, following consultation with Member States. The responsibility for the revision of the AfriSAP document lies with the ATU General Secretariat and the working groups established by it.

7. STRUCTURE OF THE TABLE OF SPECTRUM ALLOCATIONS

The AfriSAP structure for the table of spectrum allocations is based on the current frequency allocations for ITU Radio Region 1 with a four column-format. In reading AfriSAP, the following meaning is attached to the said four (4) columns:

7.1 Column 1: ITU Region 1 Allocations and Footnotes

This column is an exact replication[3] of the frequency allocations for ITU Radio Region 1 as contained in the Radio Regulations (RR) (edition 2024). All ITU footnotes, whether relevant to African countries or not, are therefore also included in this column. Frequency sub-bands are aligned with Article 5 of RR. The ITU philosophy for reflecting radiocommunication services in terms of primary and secondary allocations, placing of footnotes and using French alphabetical order, therefore, also applies. Specifically, that:

- Primary services are printed in CAPITAL letters;
- Secondary services are printed in Normal case;
- The order of listing in each frequency band does not establish priority. Services are simply listed alphabetically according to the French language alphabet;
- Where a footnote is printed next to a service that footnote applies only to that service;
- Where a footnote is printed at the bottom of a frequency band that footnote applies to more than one service or all services allocated to the particular frequency band.

For more detail on these and other principles refer to the current version of RR.

[3] Errors and omissions expected. Readers are referred to the actual RR

7.2 Column 2: Africa Common Allocations and Relevant ITU Footnotes

This column denotes the radiocommunication service or services that African administrations agreed to adopt as common allocation(s) for Africa. This column contains ITU RR Article 5 allocations and footnotes for ITU-R Region 1 on the agreed radiocommunications services for African countries. However, only the footnotes applicable to African countries appear in this column.

ITU footnotes which are underlined (e.g., 5.70) indicates that one or more African country name is reflected in the particular footnote. Further, such a footnote is followed by [LLLLNN] carrying additional information such as "additional allocation in the given number of countries". Only the footnotes applicable to African Countries should appear in this column.

The interpretation is as follows:

- 5.NNN[AddANN] == Additional Allocation in NN countries
- 5.NNN[AddAxNN] == Additional Allocation Except in NN countries
- 5.NNN[AltANN] == Alternative Allocation in NN countries
- 5.NNN[DcoSNN] == Different Category of Service in NN countries
- 5.NNN[IMTNN] == IMT Identification in NN countries, where * = all Regions
- 5.NNN[UseCNN] == Use clarification in NN countries
- 5.NNN[UseLNN] == Use limitation in NN countries
- 5.NNN[SpNtNN] == Special Note in NN countries
- 5.NNN[UseNotClPNN] == Use shall not claim protection in NN countries

Annex B provides the actual countries named in a given ITU footnote. This column also lists only those ITU footnotes relevant to African countries, i.e., footnotes not relevant to African countries have been omitted from this column.

7.3 Column 3: Typical Applications

Typical applications of a particular frequency band or sub-band are 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 the typical application or applications that are used within the band.

Where this column is empty it could be interpreted that the particular frequency band or sub-band is either currently not in use in Africa or that the use of the band could not be confirmed at the time of preparing the AfriSAP. An example will be the use of the higher frequency bands (e.g., above 40 GHz where there are currently very little use of spectrum) or for example in the bands used by science services where the specific science application was not clear at the time of preparing this plan. More work on this matter is required in the development of future editions.

7.4 Column 4: Additional Information

References to additional information relevant to the use of the corresponding frequency band are contained in this column, for example, references to relevant RR Articles and Appendices, ITU-R Recommendations, harmonised band plans, standards, reports, etc. Technical limits applicable to one or more service or application are also added in this column where needed. It should be noted that the intent of this column was to highlight and not exhaustively include all relevant ITU provisions and technical parameters. Therefore, the relevant ITU provisions should therefore continue to be consulted.

7.5 Note relating to numbers of ITU-R recommendations and reports

In the whole table the letter “X” (e.g. Rec. ITU-R SM.1896-X) after the number of a recommendation or report, denotes the latest version of the given recommendation or report.

8. TABLE OF FREQUENCY ALLOCATIONS AND APPLICATIONS

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
Below 8.3 kHz (Not allocated) 5.53 5.54	**Below 8.3 kHz** (Not allocated) 5.53 5.54	Not allocated	
8.3 - 9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	**8.3 – 9 kHz** METEOROLOGICAL AIDS 5.54A 5.54B[AddA5] 5.54C		
9 – 11.3 kHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9 – 11.3 kHz** METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	SRD: - Inductive applications (9 kHz-148.5 kHz) Ultra-Low Power Active Medical Implants (ULP-AMI)	Rec. ITU-R SM.1896-x Report ITU-R SM.2153-x Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
11.3-14 kHz RADIONAVIGATION	**11.3-14 kHz** RADIONAVIGATION	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
14-19.95 kHz FIXED MARITIME MOBILE 5.57 5.55 5.56	**14-19.95 kHz** FIXED MARITIME MOBILE 5.57 5.56	Maritime mobile communications SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
19.95-20.05 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Article 26 applies Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
20.05-70 kHz FIXED MARITIME MOBILE 5.57 5.56 5.58	**20.05-70 kHz** FIXED MARITIME MOBILE 5.57 5.56 5.58	Maritime mobile communications SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
70-72 kHz RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
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	Maritime mobile communications Navigational Aids SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
84-86 kHz RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R.SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
86-90 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	**86-90 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56	Maritime mobile communications Navigational Aids SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
90-110 kHz RADIONAVIGATION 5.62 Fixed 5.64	**90-110 kHz** RADIONAVIGATION 5.62 Fixed 5.64	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
110-112 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	**110-112 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.64	Maritime mobile communications Navigational Aids SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
112-115 kHz RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R .SM. 2153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
115-117.6 kHz RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.66	**115-117.6 kHz** RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64	Navigational Aids Maritime mobile communications SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
117.6-126 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**117.6-126 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Navigational Aids Maritime mobile communications SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-x Report. ITU-R SM. 2153-x Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
126-129 kHz RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60	Navigational Aids SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-x Report. ITU-R SM. 2153-72153-x Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
129-130 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Navigational Aids Maritime mobile communications SRD : - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-x Report ITU-R .SM. 2153-72153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
130-135.7 kHz FIXED MARITIME MOBILE 5.64 5.67	**130-135.7 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communications SRD: - ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications	Rec. ITU-R SM.1896-X Report. ITU-R SM. 2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 5.67B[UseL5]	Maritime mobile communications Amateur SRD : - Ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p). Rec. ITU-R SM.1896-X Report ITU-R SM. 2153-X Inductive SRD : ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
137.8-148.5 kHz FIXED MARITIME MOBILE 5.64 5.67	**137.8-148.5 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communications SRD: - Ultra-Low Power Active Medical Implants (ULP-AMI) inductive applications (9 kHz-148.5 kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM. 2153-X Inductive SRD: ETSI EN 300 330 ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
148.5-255 kHz BROADCASTING 5.68 5.69 5.70	**148.5-255 kHz** BROADCASTING 5.68[AltA3] 5.69[AddA1] 5.70[AltA20]	Broadcasting SRD: - Ultra-Low Power Active Medical Implants (ULP-AMI) Inductive applications (148.5 - 5000 kHz)	Frequency assignment Plan (GE75) applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m) ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
255-283.5 kHz BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70	**255-283.5 kHz** BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70[AltA20]	SRD: - Ultra-Low Power Active Medical Implants (ULP-AMI) Inductive applications (148.5 - 5000 kHz)	Frequency assignment Plan (GE75) applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m) ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195
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	SRD: - Ultra-Low Power Active Medical Implants (ULP-AMI) Inductive applications (148.5 - 5000 kHz)	ULP-AMI (9 kHz - 315 kHz) ETSI EN 302 195 Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
315-325 kHz AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	**315-325 kHz** AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
325-405 kHz AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION	Aeronautical NDBs and locators Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
405-415 kHz RADIONAVIGATION 5.76	**405-415 kHz** RADIONAVIGATION 5.76	Navigational Aids Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
415-435 kHz MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	**415-435 kHz** MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Under the MMS the use of the band 415-495 kHz is limited to radiotelegraphy. Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
435-472 kHz MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.82	**435-472 kHz** MARITIME MOBILE 5.79 Aeronautical radionavigation 5.82	Maritime mobile communications SRD : Inductive SRD applications (148.5 - 5000 kHz)	Coast Stations in the NAVTEX service on 490 kHz; Res.339 applies. Transmission of navigational and meteorological warnings and urgent info for ships (NBDP telegraphy). Articles 31 and 52 apply Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
472-479 kHz MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.77 5.80 5.80B 5.82	**472-479 kHz** MARITIME MOBILE 5.79 Amateur 5.80A[UseL10] Aeronautical radionavigation 5.80B[UseL9] 5.82	Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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 5.82	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Coast Stations in the NAVTEX service on 490 kHz; Res.339 applies. Transmission of navigational and meteorological warnings and urgent info for ships (NBDP telegraphy). Articles 31 and 52 apply. Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
495-505 kHz MARITIME MOBILE 5.82C 5.82D	**495-505 kHz** MARITIME MOBILE 5.82C 5.82D	Limited to radiotelegraphy Maritime GMDSS Broadcasting safety information from coast stations Inductive SRD applications (148.5 - 5000 kHz)	Articles 31 and 52 apply Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m) For international NAVDAT systems Rec. ITU-R M.2010 applies
505-526.5 kHz MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5 kHz** MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Coast Stations in the NAVTEX service on 518 kHz; Res.339 applies. Articles 31 and 52 apply. Under the MMS the use of the band 505-526.5 kHz is limited to radiotelegraphy. Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
526.5-1 606.5 kHz BROADCASTING 5.87 5.87A	**526.5-1 606.5 kHz** BROADCASTING 5.87[AddA8]	MW Sound broadcasting (526.5 1606.5 kHz) Inductive SRD applications (148.5 - 5000 kHz)	Frequency assignment Plan (GE75) applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime mobile communications Land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
1 625-1 635 kHz RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION 5.93[AddA2]	Navigational Aids Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Maritime mobile communications Land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
1 800-1 810 kHz RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION 5.93[AddA2]	Navigational Aids Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
1 810-1 850 kHz AMATEUR 5.98 5.99 5.100	**1 810-1 850 kHz** AMATEUR 5.98[AltA6] 5.99[AddA4] 5.100	Amateur communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime and/or land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime and/or land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 025-2 045 kHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	**2 025-2 045 kHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103	Maritime and/or land mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
2 045-2 160 kHz FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** FIXED MARITIME MOBILE LAND MOBILE 5.92	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 160-2 170 kHz RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION 5.93 5.107[AddA5]	Navigational aids Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 170-2 173.5 kHz MARITIME MOBILE	**2 170-2 173.5 kHz** MARITIME MOBILE	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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 2 174.5 kHz –is used for the Automatic Connection System (ACS) Inductive SRD applications (148.5 - 5000 kHz)	Articles 31 and 52 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m) For ACS system REC.ITU-R M.541 applies.
2 190.5-2 194 kHz MARITIME MOBILE	**2 190.5-2 194 kHz** MARITIME MOBILE	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies for broadcasting Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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)	Inductive SRD applications (148.5 - 5000 kHz)	Article 26 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 501-2 502 kHz STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space Research	Inductive SRD applications (148.5-5000 kHz)	Article 26 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 625-2 650 kHz MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	**2 625-2 650 kHz** MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	Maritime mobile communications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
2 850-3 025 kHz AERONAUTICAL MOBILE (R) 5.111 5.115	**2 850-3 025 kHz** AERONAUTICAL MOBILE (R) 5.111 5.115	Aeronautical mobile (R) 3 023 kHz may be used under the MMS for search and rescue operations Inductive SRD applications (148.5 - 5000 kHz)	Appendix 27 Allotment Plan applies Article 31 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
3 025-3 155 kHz AERONAUTICAL MOBILE (OR)	**3 025-3 155 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR) Inductive SRD applications (148.5 - 5000 kHz)	Appendix 26 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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 5.117[AltA2]	Maritime and/or land mobile communications Fixed Applications SRD: - Wireless hearing aids Inductive applications (148.5 - 5000 kHz)	Worldwide channel for low power hearing aids (3155-3195 kHz) Additional channels may be assigned in the band 3155-3400 kHz Rec. ITU-R SM.1896-X Rec. ITU-R M.1076-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Maritime and/or land mobile communications Fixed applications SRD: - Wireless hearing aids Inductive applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies for broadcasting Worldwide channel for low power hearing aids (3155-3195 kHz). Additional channels may be assigned in the band 3155-3400 kHz. Rec. ITU-R SM.1896-X Rec. ITU-R M.1076-1 Report ITU-R SM. 2153-X Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Maritime and/or land mobile communications Fixed applications SRD: - Wireless hearing aids Inductive applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies for broadcasting Worldwide channel for low power hearing aids (3155-3195 kHz). Additional channels may be assigned in the band 3155-3400 kHz. Rec. ITU-R SM.1896-X Rec. ITU-R M.1076-X Report ITU-R SM.2153-X Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
3 400-3 500 kHz AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R) applications Inductive SRD applications (148.5 - 5000 kHz)	Appendix 27 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Amateur communications Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Article 51 and 52 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
3 800-3 900 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 800-3 900 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile (OR) applications Fixed and Mobile applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
3 900-3 950 kHz AERONAUTICAL MOBILE (OR) 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) 5.123[AddA9]	Aeronautical mobile (OR) applications Inductive SRD applications (148.5 - 5000 kHz)	Appendix 26 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
3 950-4 000 kHz FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING	Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
4 000-4 063 kHz FIXED MARITIME MOBILE 5.127 5.126	**4 000-4 063 kHz** FIXED MARITIME MOBILE 5.127	Maritime mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Use of the band 4000-4063 kHz by the MMS is limited to ship stations using radiotelephony Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
4 063 - 4 438 kHz MARITIME MOBILE 5.79A 5.82D 5.109 5.110 5.130 5.131 5.132 5.128	**4 063-4 438 kHz** MARITIME MOBILE 5.79A 5.82D 5.109 5.110 5.130 5.131 5.132 5.128[UseL6]	Maritime mobile communications 4209.5 kHz - Coast Stations in the NAVTEX service - Res.339 applies. 4207.5 kHz – DSC for distress and calling; 4177.5 kHz – is used for the Automatic Connection System (ACS 4125 kHz – use of this frequency prescribed in art 31 4209.5 kHz – exclusive for transmission by coast stations of meteorological and navigational warnings and urgent information to ships (NBDP) 4210 kHz – maritime safety information (MSI); 4226 KHz : Is for establishment of coast stations in the NAVDAT system Inductive SRD applications (148.5 - 5000 kHz)	Art 31 and 52 applies ITU RR Appendix 15 and 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
4 438-4 488 kHz FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A 5.132B	**4 438-4 488 kHz** FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A	Maritime and/or land mobile communications Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
4 488 -4 650 kHz FIXED MOBILE except aeronautical mobile (R)	**4 488 -4 650 kHz** FIXED MOBILE except aeronautical mobile (R)	Fixed and Mobile applications Maritime applications Inductive SRD applications (148.5 - 5000 kHz)	Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
4650 – 4700 kHz AERONAUTICAL MOBILE (R)	**4650 – 4700 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R) Inductive SRD applications (148.5 - 5000 kHz)	Appendix 27 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
4 700-4 750 kHz AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR) Inductive SRD applications (148.5 - 5000 kHz)	Appendix 26 Allotment Plan applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
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	Aeronautical mobile (OR) and/or land mobile Sound broadcasting Fixed and Mobile applications Inductive SRD applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
4 850-4 995 kHz FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** FIXED LAND MOBILE BROADCASTING 5.113	Land mobile Sound broadcasting Fixed Applications Inductive SRD applications (148.5 - 5000 kHz)	Article 23.3 to 23.10 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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)	Inductive SRD applications (148.5 - 5000 kHz)	Article 26 applies Inductive SRD: ETSI EN 300 330 (magnetic field -15 dBµA/m @ 10m)
5 003-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		Article 26 applies
5 005-5 060 kHz FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113	Sound broadcasting Fixed Applications	Article 23.3 to 23.10 applies
5 060-5 250 kHz FIXED Mobile except aeronautical mobile 5.133	**5 060-5 250 kHz** FIXED Mobile except aeronautical mobile 5.133[DcoS1]	Fixed and Mobile applications Maritime applications	
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	Fixed Applications	
5 275 -5 351.5kHz FIXED MOBILE except aeronautical mobile	**5 275 -5 351.5kHz** FIXED MOBILE except aeronautical mobile	Aeronautical mobile Fixed and Mobile applications	
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	Fixed and Mobile Applications	Amateur in 5 351.5 -5 366.5 kHz
5 366.5 -5 450 kHz FIXED MOBILE except aeronautical mobile	**5 366.5 -5 450 kHz** FIXED MOBILE except aeronautical mobile	Fixed and Mobile Applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
5 450 kHz – 5 480 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**5 450 kHz – 5 480 kHz** 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	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies Search and rescue operations at 5680 kHz
5 680-5 730 kHz AERONAUTICAL MOBILE (OR) 5.111 5.115	**5 680-5 730 kHz** AERONAUTICAL MOBILE (OR) 5.111 5.115	Aeronautical mobile (OR)	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	Land mobile	
5 900-5 950 kHz BROADCASTING 5.134 5.136	**5 900-5 950 kHz** BROADCASTING 5.134 5.136	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
5 950-6 200 kHz BROADCASTING	**5 950-6 200 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
6 200-6 525 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137A 5.137	**6 200-6 525 kHz** MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137A 5.137	Maritime mobile communications 6312 kHz and 6215 kHz – DSC for distress and calling; Article 31 applies 6268 kHz – automatic connection system (ACS) 6314 kHz – maritime safety information (MSI. 6337,5: maritime safety information (MSI) by means of the NAVDAT system	ITU RR Appendix 15 and 17 Channelling Plan apply ITU RR Appendix 25 Allotment Plan applies Article 31 applies
6 525-6 685 kHz AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
6 685-6 765 kHz AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies
6 765-7 000 kHz FIXED MOBILE except aeronautical mobile (R) 5.138	**6 765-7 000 kHz** FIXED MOBILE except aeronautical mobile (R) 5.138	Maritime and/or land mobile communications SRD: Inductive applications	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X ISM band (6765-6795 kHz): centre frequency 6 780 kHz
7 000-7 100 kHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE 5.140[AddA3] 5.141[AltA7]	Amateur communications Amateur-satellite communications	
7 100-7 200 kHz AMATEUR 5.141A 5.141B	**7 100-7 200 kHz** AMATEUR 5.141B[AddA15]	Amateur communications	This band is also used for fixed and Mobile Applications in some countries
7 200-7 300 kHz BROADCASTING	**7 200-7 300 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 5.143C[AddA11]	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply. This band is also used for fixed and Mobile Applications in some countries
7 400-7 450 kHz BROADCASTING 5.143B 5.143C	**7 400-7 450 kHz** BROADCASTING 5.143B 5.143C[AddA11]	HF Sound Broadcasting SRD applications (7 400 – 8 800 kHz)	ITU RR Article 12 Planning Procedures applies Rec. ITU-R SM.1896-X Report ITU-R SM. 2153-X
7 450-8 100 kHz FIXED MOBILE except aeronautical mobile (R) 5.144	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R)	Maritime applications SRD applications (7 400 – 8 800 kHz)	Rec. ITU-R SM.1896-X, Report ITU-R SM. 2153-X
8 100-8 195 kHz FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED MARITIME MOBILE	Maritime mobile communications SRD applications (7 400 – 8 800 kHz)	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
8 195-8 815 kHz MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145 5.111	**8 195-8 815 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145 5.111	Maritime mobile communications 8414.5 kHz – DSC for distress and calling; 8416.5 kHz – maritime safety information (MSI); 8 376.5 kHz- Automatic Connection System (ACS), 8 443 kHz - Regional Frequencies for the transmission of Maritime Safety Information (MSI) by means of the NAVDAT system	ITU RR Appendix 15 and17 Channelling Plan apply Article 31 and 52 apply ITU RR Appendix 25 Allotment Plan applies Recommendation ITU-R M.541. Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Inductive SRD applications (7 400 – 8 800 kHz) EN 300 330 V2.1.1
8 815-8 965 kHz AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
8 965-9 040 kHz AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies
9 040-9 305 kHz FIXED	**9 040-9 305 kHz** FIXED	Fixed Applications	
9 305 -9 355 kHz FIXED Radiolocation 5.145A 5.145B	**9 305 -9 355 kHz** FIXED Radiolocation 5.145A		
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	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Fixed Applications	
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	Search and rescue operations at 10003 kHz ± 3 kHz	Article 26 applies
10 003-10 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	**10 003-10 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	Search and rescue operations at 10003 kHz ± 3 kHz Inductive SRD applications (10.2 - 11 MHz)	Article 26 applies
10 005-10 100 kHz AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111	Aeronautical mobile communications (R) Search and rescue operations at 10003 kHz ± 3 kHz	Appendix 27 Allotment Plan applies
10 100-10 150 kHz FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur	Fixed Applications Amateur communications	
10 150-11 175 kHz FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)	Maritime applications	
11 175-11 275 kHz AERONAUTICAL MOBILE (OR)	**11 175-11 275 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies
11 275-11 400 kHz AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
11 400-11 600 kHz FIXED	**11 400-11 600 kHz** FIXED	Fixed Applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
11 600-11 650 kHz BROADCASTING 5.134 5.146	**11 600-11 650 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
11 650-12 050 kHz BROADCASTING 5.147	**11 650-12 050 kHz** BROADCASTING 5.147	HF Sound Broadcasting	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	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
12 100-12 230 kHz FIXED	**12 100-12 230 kHz** FIXED	Fixed Applications	
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	Maritime mobile communications 12 290 kHz: Carrier frequencies. 12 520 kHz –ACS 12 577 kHz – DSC for distress and calling; 12 663,5 kHz - Regional Frequencies for the transmission of Maritime Safety Information (MSI) by means of the NAVDAT system. 12 579 kHz – maritime safety information (MSI); 12 579 kHz- Maritime Safety Information (MSI)	ITU RR Appendix 15 and17 Channelling Plan apply ITU RR Appendix 25 Allotment Plan applies
13 200-13 260 kHz AERONAUTICAL MOBILE (OR)	**13 200-13 260 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
13 260-13 360 kHz AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications (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	Radio Astronomy (Observations of decametric radiation) Fixed Applications	
13 410-13 450 kHz FIXED Mobile except aeronautical mobile (R)	**13 410-13 450 kHz** FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	
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		
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	Inductive SRD applications (13 553-13 567kHz)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X ISM band (13 553-13 567kHz)
13 570-13 600 kHz BROADCASTING 5.134 5.151	**13 570-13 600 kHz** BROADCASTING 5.134 5.151	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
13 600-13 800 kHz BROADCASTING	**13 600-13 800 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
13 800-13 870 kHz BROADCASTING 5.134 5.151	**13 800-13 870 kHz** BROADCASTING 5.134 5.151	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
13 870-14 000 kHz FIXED Mobile except aeronautical mobile (R)	**13 870-14 000 kHz** FIXED Mobile except aeronautical mobile (R)	Maritime and/or land mobile communications	
14 000-14 250 kHz AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
14 250-14 350 kHz AMATEUR 5.152	**14 250-14 350 kHz** AMATEUR 5.152[AddA1]	Amateur communications	
14 350-14 990 kHz FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)	Fixed Applications	
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	Search and rescue operations at 14993 kHz	Article 26 applies
15 005-15 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		Article 26 applies
15 010-15 100 kHz AERONAUTICAL MOBILE (OR)	**15 010-15 100 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies
15 100-15 600 kHz BROADCASTING	**15 100-15 600 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 (WRC-19) applies
15 800-16 100 kHz FIXED 5.153	**15 800-16 100 kHz** FIXED	Fixed Applications	
16 100-16 200 kHz FIXED Radiolocation 5.145A 5.145B	**16 100-16 200 kHz** FIXED Radiolocation 5.145A		
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 5.137A 5.145	**16 360-17 410 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.137A 5.145	Maritime mobile communications 16 804.5kHz – International distress frequencies for digital selective calling (DCS); 16 695 kHz – Automatic Connection System (ACS), 16 806.5 kHz – maritime safety information (MSI) 16 909,5 kHz- Regional Frequencies for the transmission of Maritime Safety Information (MSI) by means of the NAVDAT system	ITU RR Appendix 15 and 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies Article 31 applies. ITU-R M.541.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
17 410-17 480 kHz FIXED	**17 410-17 480 kHz** FIXED	Fixed Applications	
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 (WRC-19) applies
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)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
17 970-18 030 kHz AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	Appendix 26 Allotment Plan applies
18 030-18 052 kHz FIXED	**18 030-18 052 kHz** FIXED	Fixed Applications	
18 052-18 068 kHz FIXED Space research	**18 052-18 068 kHz** FIXED Space research	Fixed Applications	
18 068-18 168 kHz AMATEUR AMATEUR-SATELLITE 5.154	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
18 168-18 780 kHz FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile	Maritime and/or land mobile communications Fixed Applications	
18 780-18 900 kHz MARITIME MOBILE	**18 780-18 900 kHz** MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Channelling Plan applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
18 900-19 020 kHz BROADCASTING 5.134 5.146	**18 900-19 020 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 (WRC-19) applies
19 020-19 680 kHz FIXED	**19 020-19 680 kHz** FIXED	Fixed Applications	
19 680-19 800 kHz MARITIME MOBILE 5.132	**19 680-19 800 kHz** MARITIME MOBILE 5.132	Maritime applications The frequency 19 680.5 kHz is the international frequency for transmission of MSI.	ITU RR Appendix 15 and 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies
19 800-19 990 kHz FIXED	**19 800-19 990 kHz** FIXED	Fixed Applications	
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	Search and rescue operations at 19993 kHz ±3 kHz	Article 26 applies
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	Search and rescue operations at 19993 kHz ±3 kHz	Article 26 applies
20 010-21 000 kHz FIXED Mobile	**20 010-21 000 kHz** FIXED Mobile	Fixed Applications	
21 000-21 450 kHz AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
21 450-21 850 kHz BROADCASTING	**21 450-21 850 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
21 850-21 870 kHz FIXED 5.155A 5.155	**21 850-21 870 kHz** FIXED	Fixed Applications	
21 870-21 924 kHz FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B	Fixed Applications	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)	Aeronautical mobile communications (R)	Appendix 27 Allotment Plan applies
22 000-22 855 kHz MARITIME MOBILE 5.132 5.137A 5.156	**22 000-22 855 kHz** MARITIME MOBILE 5.132 5.137A 5.156[AddA1]	Maritime applications The frequency 22 376 kHz is the international frequency for transmission of MSI. 22 450,5 kHz- Regional Frequencies for the transmission of Maritime Safety Information (MSI) by means of the NAVDAT system	ITU RR Appendix 15 and 17 Channelling Plan apply. ITU RR Appendix 25 Allotment Plan applies.
22 855-23 000 kHz FIXED 5.156	**22 855-23 000 kHz** FIXED 5.156[AddA1]	Fixed Applications	
23 000-23 200 kHz FIXED Mobile except aeronautical mobile (R) 5.156	**23 000-23 200 kHz** FIXED Mobile except aeronautical mobile (R) 5.156[AddA1]	Fixed Applications	
23 200-23 350 kHz FIXED 5.156A AERONAUTICAL MOBILE (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications (OR)	The use of this band by the FS is limited to the provision of services related to aircraft flight safety (5.156A)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
23 350-24 000 kHz FIXED MOBILE except aeronautical mobile 5.157	**23 350-24 000 kHz** FIXED MOBILE except aeronautical mobile 5.157	Fixed Applications	The use of this band by the MMS is limited to inter-ship radiotelegraphy (5.157).
24 000-24 450 kHz FIXED LAND MOBILE	**24 000-24 450 kHz** FIXED LAND MOBILE	Fixed and mobile applications	
24 450 -24 600 kHz FIXED LAND MOBILE Radiolocation 5.132A 5.158	**24 450 -24 600 kHz** FIXED LAND MOBILE Radiolocation 5.132A	Fixed Applications	
24 600-24 890 kHz FIXED LAND MOBILE	**24 600-24 890 kHz** FIXED LAND MOBILE	Fixed Applications	
24 890 kHz-24 990 kHz AMATEUR AMATEUR SATELLITE	**24 890 kHz-24 990 kHz** AMATEUR AMATEUR SATELLITE	Amateur applications	
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)		Article 26 applies
25 005-25 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		Article 26 applies
25 010-25 070 kHz FIXED MOBILE except aeronautical mobile	**25 010-25 070 kHz** FIXED MOBILE except aeronautical mobile	Fixed and Mobile applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
25 070-25 210 kHz MARITIME MOBILE	**25 070-25 210 kHz** MARITIME MOBILE	Maritime applications	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies. Maritime mobile communications International DSC calling at 25208.5 kHz
25 210-25 550 kHz FIXED MOBILE except aeronautical mobile	**25 210-25 550 kHz** FIXED MOBILE except aeronautical mobile	Fixed and Mobile Applications	
25 550-25 670 kHz RADIO ASTRONOMY 5.149	**25 550-25 670 kHz** RADIO ASTRONOMY 5.149	Radio Astronomy (Observations of decametric radiation)	
25 670-26 100 kHz BROADCASTING	**25 670-26 100 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies.
26 100-26 175 kHz MARITIME MOBILE 5.132	**26 100-26 175 kHz** MARITIME MOBILE 5.132	Maritime applications The frequency 26 100.5 kHz is the international frequency for transmission of MSI.	ITU RR Appendix 15 and 17 Channelling Plan apply. ITU RR Appendix 25 Allotment Plan applies.
26 175-26200 kHz FIXED MOBILE except aeronautical mobile	**26 175-26 200 kHz** FIXED MOBILE except aeronautical mobile	Fixed Applications Mobile systems (single frequency) CB Radio (26.96-27.410 MHz)	
26 200-26 350 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A 5.133A	**26 200-26 350 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	Fixed and mobile applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
26 350-27 500 kHz FIXED MOBILE except aeronautical mobile 5.150	**26 350-27 500 kHz** FIXED MOBILE except aeronautical mobile 5.150	Fixed and mobile applications Inductive/non-specific SRD applications (26 957-27 283 kHz): - Wireless control devices Measurement equipment	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Rec. ITU-R SM.2103-X
27.5-28 MHz METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE	Fixed and mobile applications Meteorological applications	
28-29.7 MHz AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	
29.7-30.005 MHz FIXED MOBILE	**29.7-30.005 MHz** FIXED MOBILE	Fixed Applications	
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		
30.01-37.5 MHz FIXED MOBILE	**30.01-37.5 MHz** FIXED MOBILE	Fixed and mobile applications Private Mobile Radio (walkie talkies)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
37.5-38.25 MHz FIXED MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** FIXED MOBILE Radio astronomy 5.149	Private Mobile Radio (walkie talkies) Radio Astronomy (Observations of decametric radiation)	
38.25-39 MHz FIXED MOBILE	**38.25-39 MHz** FIXED MOBILE	Private Mobile Radio (walkie talkies) Mobile applications	
39-39.5 MHz FIXED MOBILE Radiolocation 5.132A 5.159	**39-39.5 MHz** FIXED MOBILE Radiolocation 5.132A	Mobile applications	
39.5-39.986 MHz FIXED MOBILE	**39.5-39.986 MHz** FIXED MOBILE		
39.986-40 MHz FIXED MOBILE Space research	**39.986-40 MHz** FIXED MOBILE Space research	Private Mobile Radio (walkie talkies)	
40 - 40.02 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A Space research	**40 - 40.02 MHz** FIXED MOBILE Earth exploration-satellite (active) 5.159A Space research		Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
40.02-40.98 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.150	**40.02-40.98 MHz** FIXED MOBILE 5.150	Private Mobile Radio (walkie talkies) Fixed applications SRD (40.66 – 40.7 MHz): - Radio Microphone - Wireless control devices Measurement equipment ISM band (40.66-40.70 MHz): center frequency 40.68 MHz	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.
40.98-41.015 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A Space research 5.160 5.161	**40.98-41.015 MHz** FIXED MOBILE Space research 5.160[AddA4]	Private Mobile Radio (walkie talkies)	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.
41.015-42MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	**41.015-42 MHz** FIXED MOBILE 5.160[AddA4]	Private Mobile Radio (walkie talkies) Fixed Applications	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.
42-42.5 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A Radiolocation 5.132A 5.160 5.161B	**42-42.5 MHz** FIXED MOBILE Radiolocation 5.132A 5.160[AddA4]	Fixed and mobile applications	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
42.5-44 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.160 5.161 5.161A	**42.5-44 MHz** FIXED MOBILE 5.160[AddA4]	Fixed and mobile applications	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13.
44-47 MHz FIXED MOBILE Earth exploration-satellite (active) 5.159A 5.162 5.162A	**44-47 MHz** FIXED MOBILE	Private Mobile Radio (walkie talkies) Meteor Burst (45.3-46.9 MHz)	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13. Paired with 47.5-49.1 MHz)
47-50 MHz BROADCASTING Earth exploration-satellite (active) 5.159A 5.162A 5.163 5.164 5.165	**47-50 MHz** BROADCASTING 5.164[AddA15] 5.165[AddA12]	Private Mobile Radio (walkie talkies) Meteor Burst (47.5-49.1 MHz) Broadcasting systems	Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X Resolution 677 (CMR-23) RR No. 15.13. Paired with 45.3-46.9 MHz GE89 applies
50-52 MHz BROADCASTING Amateur 5.166B 5.166C 5.166D 5.166E 5.169B 5.162A 5.164 5.165 5.166A 5.169 5.169A	**50-52 MHz** BROADCASTING Amateur 5.166B 5.166C 5.169B[UseL5] 5.164[AddA15] 5.165[AddA12] 5.169[AltA10] 5.169A[AltA17]	Broadcasting systems The bands : 50.0-50.5 MHz ; 50-51 ; 50-54 MHz - Amateur service on a primary basis This band is also used for Private Mobile Radio in some countries	GE89 applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
52-68 MHz BROADCASTING 5.162A 5.163 5.164 5.165 5.169 5.169A 5.169B 5.171	**52-68 MHz** BROADCASTING 5.164[AddA15] 5.165[AddA12] 5.169[AltA10] 5.169A[AltA17] 5.169B[UseL5] 5.171[AddA11]	Broadcasting systems The bands : 50.0-50.5 MHz ; 50-51 ; 50-54 MHz - Amateur service on a primary basis 54-68 MHz – used in some contries to fixed and mobile, except aeronautical mobile	GE89 applies
68-74.8 MHz FIXED MOBILE except aeronautical mobile 5.149 5.175 5.177 5.179	**68-74.8 MHz** FIXED MOBILE except aeronautical mobile 5.149	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Fixed application	In making assignments to stations in the frequency band 73 – 74.6 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
74.8-75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180 5.181[AddA1]	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** FIXED MOBILE except aeronautical mobile	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Fixed and mobile application	
87.5-100 MHz BROADCASTING 5.190	**87.5-100 MHz** BROADCASTING	FM Sound broadcasting (87.5-108 MHz)	Geneva 1984 Agreement (GE84) applies
100-108 MHz BROADCASTING 5.192 5.194	**100-108 MHz** BROADCASTING 5.194[AddA1]	FM Sound broadcasting (87.5-108 MHz)	Geneva 1984 Agreement (GE84) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
108-117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	**108-117.975 MHz** AERONAUTICAL RADIONAVIGATION 5.197A	Instrument Landing System (ILS) / Localiser (108-112 MHz) VHF Omni-directional Range (VOR) (112-117.975 MHz) Aeronautical mobile communications (108-117.975 MHz)	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) AERONAUTICAL MOBILE-SATELLITE (R) 5.198A 5.198B 5.111 5.200 5.201 5.202	**117.975-137 MHz** AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R) 5.198A 5.198B 5.111 5.200 5.201[AddA5] 5.202[AddA2]	Aeronautical mobile communications (R) **Mobile stations of the maritime mobile service** 121.5 MHz: aeronautical emergency frequency. the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. 132-136 MHz is allocated to the aeronautical mobile (OR) service on a primary basis in some countries 136-137 MHz is allocated to the aeronautical mobile (OR) service on a primary basis in some country 121.450-121.550 MHz International Distress Frequency (121.5 MHz) 121.550-137.000 MHz Aeronautical mobile communications	Safety and regularity of flights applications as per RR n° 9.11A Article 31 is applies EPIRBs at 121.5 MHz ITU RR Article 31 applies 123.1 MHz - auxiliary emergency frequency

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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) Fixed Mobile except aeronautical mobile (R) 5.206[DcoS1] 5.208		In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Recommendation ITU-R RA.769 applies Resolution 739 (Rev.WRC-19) applies
137.025-137.175 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.206 Mobile-satellite (space-to-Earth) 5.208 5.208A 5.208B 5.209 5.204 5.205 5.207	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.206[DcoS1] Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.208		In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Recommendation ITU-R RA.769 applies Resolution 739 (Rev.WRC-19) applies
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) 5.206 5.204 5.205 5.207	**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) 5.206[DcoS1]	NOAA[4] meteorology satellite (137.500-137.620 MHz)	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Recommendation ITU-R RA.769 applies Resolution 739 (Rev.WRC-19) applies

[4] National Oceanic and Atmospheric Administration

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
137.825-138 MHz SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronauteical mobile (R) 5.206 Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.207	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.206[DcoS1] 5.208		In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Recommendation ITU-R RA.769 applies Resolution 739 (Rev.WRC-19) applies
138-143.6 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**138-143.6 MHz** AERONAUTICAL MOBILE (OR) 5.211[AddA6] 5.212[AltA26] 5.214[AddA7] SADC5	Aeronautical Communications (OR)	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
143.6-143.65 MHz AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	**143.6-143.65 MHz** AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211[AddA6] 5.212[AltA26] 5.214[AddA7]	Aeronautical Communications (OR)	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
143.65-144 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**143.65-144 MHz** AERONAUTICAL MOBILE (OR) 5.211[AddA6] 5.212[AltA26] 5.214[AddA7]	Aeronautical Communications (OR)	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
144-146 MHz AMATEUR AMATEUR-SATELLITE 5.216	**144-146 MHz** AMATEUR AMATEUR-SATELLITE	Amateur satellite systems	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
146-148 MHz FIXED MOBILE except aeronautical mobile (R)	**146-148 MHz** FIXED MOBILE except aeronautical mobile (R)	Private Mobile Radio (walkie talkies) Fixed applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221[UseL33]	Mobile satellite communications (Little LEO) Fixed applications Private Mobile Radio (walkie talkies)	For some Little LEO systems this band is supplemented by the band 149.9-150.05 MHz
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	Mobile satellite communications (Little LEO)	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
150.05-153 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	**150.05-153 MHz** FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) Paging Fixed applications Radio Astronomy (continuum band and also used for pulsar and solar observation)	
153-154 MHz FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	**153-154 MHz** FIXED MOBILE except aeronautical mobile (R) Meteorological Aids	Private Mobile Radio (walkie talkies) Fixed applications	
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[AddA1] 5.226	154-156 MHz Private Mobile Radio (walkie talkies)	
		156.00-156.4875 MHz Maritime mobile communications (Ship stations) Land mobile in areas remote from coast	Paired with 160.625-160.950 MHz, single frequency 156.3 MHz and in the band 156.375-156.475 MHz ITU RR Articles 31 and 52 and Appendix 18 apply.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Maritime mobile distress, safety and calling frequency 156.525 MHz for maritime mobile VHF radiotelephone service using DSC. The bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz may also be used for land mobile services while protecting the maritime mobile service.	ITU RR Articles 31 and 52 and Appendix 18 apply. In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
156.5625-156.7625 MHz FIXED MOBILE except aeronautical mobile (R) 5.226	**156.5625-156.7625 MHz** FIXED MOBILE except aeronautical mobile (R) 5.226	Fixed and mobile applications Maritime mobile communications Land mobile in areas remote from coast Private Mobile Radio (walkie talkies)	Single frequency applications, ITU RR Articles 31 and 52 and Appendix 18 apply
156.7625-156.7875 MHz MARITIME MOBILE Mobile-Satellite (Earth to - space) 5.111 5.226 5.228	**156.7625-156.7875 MHz** MARITIME MOBILE Mobile-Satellite (Earth – to - space) 5.111 5.226 5.228	Maritime applications International distress, safety and calling frequency at 156.8 MHz for the maritime mobile VHF radiotelephone service.	ITU RR Article 31 and Appendix 18 apply to the use of this band. In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
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	Maritime applications International distress, urgency, safety and calling by radiotelephony at 156.8 MHz (VHF-CH16) Search and rescue operations at 156.8 MHz	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
156.8125-156.8375 MHz MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	**156.8125-156.8375 MHz** MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	Maritime applications	In some countries this band is also used for Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies)
156.8375-157.1875 MHz FIXED MOBILE except aeronautical mobile 5.226	**156.8375-157.1875 MHz** FIXED MOBILE except aeronautical mobile 5.226	156.8375-157.45 MHz Maritime mobile communications (ship stations). Land mobile in areas remote from coast 157.450-160.6 MHz Private Mobile Radio (walkie talkies) 160.600-160.975 MHz Maritime mobile communications (Coast stations). Land mobile in areas remote from coast 160.975-161.475 MHz Private Mobile Radio (walkie talkies)	Paired with 161.5-162.0 MHz and single frequency applications; ITU RR Articles 31 and 52 and Appendix 18 apply Paired with 156.025-156.350 MHz; ITU RR Articles 31 and 52 and Appendix 18 apply Single frequency applications
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 5.208A 5.208B 5.228AB 5.228AC[UseL1] 5.226		ITU RR Articles 31 and 52 and Appendix 18 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
157.3375-161.7875 MHz FIXED MOBILE except aeronautical mobile 5.226	**157.3375-161.7875 MHz** FIXED MOBILE except aeronautical mobile 5.226		ITU RR Articles 31 and 52 and Appendix 18 apply
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[UseL1] 5.226		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	Maritime applications Private Mobile Radio (walkie talkies) and/or Public Access	ITU RR Articles 31 and 52 and Appendix 18 apply
161.9625-161.9875 MHz FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	**161.9625-161.9875 MHz** FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Maritime applications Private Mobile Radio (walkie talkies)	ITU RR Articles 31 and 52 and Appendix 18 apply
161.9875-162.0125 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	**161.9875-162.0125 MHz** FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229[AltA1]	Maritime applications Private Mobile Radio (walkie talkies)	ITU RR Articles 31 and 52 and Appendix 18 apply
162.0125-162.0375 MHz FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	**162.0125-162.0375 MHz** FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Maritime applications Private Mobile Radio (walkie talkies) and/or Public Access	ITU RR Articles 31 and 52 and Appendix 18 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
162.0375-174 MHz FIXED MOBILE except aeronautical mobile 5.226	**162.0375-174 MHz** FIXED MOBILE except aeronautical mobile 5.226	Fixed and mobile applications Private Mobile Radio (walkie talkies) and/or Public Access	ITU RR Articles 31 and 52 and Appendix 18 apply
174-223 MHz BROADCASTING 5.235 5.237 5.243	**174-223 MHz** BROADCASTING 5.237[AddA11] 5.243[AddA1]	T-DAB & DVB-T (174-230 MHz) SRD: Wireless (Radio) microphones (174 – 216 MHz)	TV Band III Migration from analogue to digital in accordance with each African Country time lines GE06 Plan applies Wireless microphones, see Rec. ITU-R BT.1871-X, ETSI EN 300 422
223-230 MHz BROADCASTING Fixed Mobile 5.243 5.246 5.247	**223-230 MHz** BROADCASTING Fixed Mobile 5.243[AddA1] 5.246[AltA2]	T-DAB & DVB-T (174-230 MHz) SRD: Wireless (Radio) Microphone	TV Band III Migration from analogue to digital in accordance with each African Country time lines GE06 Plan applies Wireless microphones, see Rec. ITU-R BT.1871-X
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-235 MHz** FIXED MOBILE 5.251[AddA1] 5.252[AltA9]	Fixed and Mobile Applications	In some countries, the band 230-238 MHz is used for TV broadcasting (TV Band III).

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
235-267 MHz FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	**235-267 MHz** FIXED MOBILE 5.111 5.252[AltA9] 5.254 5.256	235 – 238 MHz Fixed and Mobile Applications Private Mobile Radio (walkie talkies) 238 – 242.95 MHz Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) 242.95 – 243.05 MHz International Distress Frequency (243 MHz) 243.5 – 267 MHz Private Mobile Radio (walkie talkies)	In some countries, the band 246-254 MHz is used for TV broadcasting (TV Band III). Band available for distress and safety purposes Search and rescue operations and operation of survival craft stations and equipment used for survival purposes at 243 MHz Low-power devices ancillary to the broadcasting service In some countries, this band is use for TV broadcasting (TV Band III) (246 – 254 MHz). Report ITU-R SM.2153-X
267-272 MHz FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	**267-272 MHz** FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	Mobile applications	
272-273 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	**272-273 MHz** FIXED MOBILE 5.254	Fixed and Mobile applications	
273-312 MHz FIXED MOBILE 5.254	**273-312 MHz** FIXED MOBILE 5.254	Fixed and Mobile applications	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
312-315 MHz FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	**312-315 MHz** FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	Fixed and Mobile applications	The use by non-geostationary-satellite is subject to coordination under No. 9.11A The use by the mobile-satellite service, subject to agreement obtained under No. 9.21
315-322 MHz FIXED MOBILE 5.254	**315-322 MHz** FIXED MOBILE 5.254	Mobile applications	
322-328.6 MHz FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** FIXED MOBILE RADIO ASTRONOMY 5.149	Mobile applications Radio Astronomy (Observation of deuterium)	
328.6-335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258 5.259[AddA1]	Instrument Landing Systems (ILS) (glide path)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
335.4-387 MHz FIXED MOBILE 5.254	**335.4-387 MHz** FIXED MOBILE 5.254	335.4-336 MHz Private Mobile Radio (walkie talkies) 336-346 MHz Fixed Wireless Access 346.0-356.0 MHz Private Mobile Radio (walkie talkies) 356.0-366.0 MHz Fixed Wireless Access 366.0-380.0 MHz Private Mobile Radio (walkie talkies) 380.0-387.0 MHz PPDR Private Mobile Radio (walkie talkies)	PTP/PTMP rural system; Paired with 356-366 MHz PTP/PTMP rural system; Paired with 336-346 MHz Paired with 390.0-397.0 MHz To be used mainly for digital systems. For PPDR Refer to Annex E
387-390 MHz FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	**387-390 MHz** FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	387.0-390.0 MHz Private Mobile Radio (walkie talkies) Fixed applications	Paired with 397.0-399.9 MHz To be used mainly for digital systems. The use by non-geostationary-satellite is subject to coordination under No. 9.11A The use by the mobile-satellite service, subject to agreement obtained under No. 9.21
390-399.9 MHz FIXED MOBILE 5.254	**390-399.9 MHz** FIXED MOBILE 5.254	390.0-397.0 MHz PPDR Private Mobile Radio (walkie talkies) 397.0-399.9 MHz Private Mobile Radio (walkie talkies) Fixed applications	Paired with 380.0-387.0 MHz To be used mainly for digital systems. For PPDR Refer to Annex E Paired with 387.0-390.0 MHz To be used mainly for digital systems.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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		
400.05-400.15 MHz STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	**400.05-400.15 MHz** STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262[AddA5]		Article 26 applies
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 Space operation (space-to-Earth) 5.262[AddA5] 5.264	Meteorological applications	
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) Fixed Mobile except aeronautical mobile 5.264A 5.264B	Meteorological applications Fixed and Mobile applications SRD: Ultra-low power active medical implants (ULP-AMI)	Report ITU-R SM.2153-X ULP-AMI (402 – 405 MHz) Rec. ITU-R RS.1346

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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) Fixed Mobile except aeronautical mobile 5.264A 5.264B	Meteorological applications Fixed and Mobile applications SRD: Ultra low power active medical implants (ULP-AMI)	Report ITU-R SM.2153-X ULP-AMI (402 – 405 MHz) Rec. ITU-R RS.1346
403-406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	**403-406 MHz** METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	SRD: Ultra low power active medical implants (ULP-AMI)	ULP-AMI (402 – 405 MHz) Rec. ITU-R RS.1346, Report ITU-R SM.2153-X, ETSI EN 302 537 (405 – 406 MHz)
406-406.1 MHz MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267	**406-406.1 MHz** MOBILE-SATELLITE (Earth-to-space) 5.265 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** FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR Fixed applications	
410-420 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	**410-420 MHz** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR Fixed and Mobile applications Measurement and Remote-control equipment	For PPDR Refer to Annex E

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
420-430 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	**420-430 MHz** FIXED MOBILE except aeronautical mobile Radiolocation	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR Fixed applications	For PPDR Refer to Annex E
430-432 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	**430-432 MHz** AMATEUR RADIOLOCATION 5.274[AltA1] 5.275[AddA1] 5.276[AddA14] 5.277[AddA8]	Amateur Applications PPDR	In some countries this band is used for Public Mobile Radio and Public access Mobile Radio and fixed applications For PPDR Refer to Annex E
432-438 MHz AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 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[AddA14] 5.277[AddA8] 5.282	Amateur Applications (432-438 MHz) Amateur-satellite Applications (435-438 MHz) Non-specific SRD applications (433.05-434.79 MHz) PPDR	In some countries this band is used for Public Mobile Radio and Public access Mobile Radio and fixed applications Conditions for amateur satellite service is given in 5.282 ISM band (433.05-434.79 MHz) For PPDR Refer to Annex E
438-440 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	**438-440 MHz** AMATEUR RADIOLOCATION 5.274[AltA1] 5.275[AddA1] 5.276[AddA14] 5.277[AddA8]	Amateur PPDR	In some countries this band is used for Public Mobile Radio and Public access Mobile Radio and fixed applications For PPDR Refer to Annex E

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
440-450 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.285 5.270 5.271 5.284 5.286	**440-450 MHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.286	Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR FIXED (telemetry, dual frequency alarm systems) SRD : Private Mobile Radio (PMR/dPMR446(446.0-446.2 MHz))	PMR/dPMR446: -see Report ITU-R M.2474, ETSI EN 303 405 and ECC/DEC/ (15)05 For PPDR Refer to Annex E The use for the space operation service (Earth-to-space) and the space research service (Earth-to-space) is subject to agreement obtained under No. 9.21.
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[IMT*] 5.209 5.286 5.286A 5.286B 5.286C 5.286E[AddA2]	Fixed links (PTP) IMT (450-470 MHz) Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR	For PPDR Refer to Annex E The use for the space operation service (Earth-to-space) and the space research service (Earth-to-space) is subject to agreement obtained under No. 9.21. The use of the mobile-satellite service is subject to coordination under No. 9.11A.
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[IMT*] 5.209 5.286A 5.286B 5.286C 5.286E[AddA2]	Fixed links (PTP) IMT (450-470 MHz) Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR	The use for the space operation service (Earth-to-space) and the space research service (Earth-to-space) is subject to agreement obtained under No. 9.21. The use of the mobile-satellite service is subject to coordination under No. 9.11A.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
456-459 MHz FIXED MOBILE 5.286AA 5.271 5.287 5.288	**456-459 MHz** FIXED MOBILE 5.286AA[IMT*] 5.287	Fixed links (PTP) IMT (450-470 MHz) Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR	Use of the maritime mobile service is limited to on-board communication stations. Recommendation ITU-R M.1174-4 applies. Tell me more
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[IMT*] 5.209 5.286A 5.286B 5.286C 5.286E[AddA2]	Fixed links (PTP) IMT (450-470 MHz) Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR	The use for the space operation service (Earth-to-space) and the space research service (Earth-to-space) is subject to agreement obtained under No. 9.21. The use of the mobile-satellite service is subject to coordination under No. 9.11A.
460-470 MHz FIXED MOBILE 5.286AA 5.287 5.288 Meteorological-satellite (space-to-Earth) 5.290 5.289	**460-470 MHz** FIXED MOBILE 5.286AA[IMT*] 5.287 Meteorological-satellite (space-to-Earth) 5.289	Fixed links (PTP) IMT (450-470 MHz) Private Mobile Radio (walkie talkies) and/or Public Access Mobile Radio (walkie talkies) PPDR	Use of the maritime mobile service is limited to on-board communication stations. Recommendation ITU-R M.1174-4 applies.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
470-694 MHz BROADCASTING 5.149 5.291A 5.294 5.295A 5.296 5.300 5.304 5.306 5.307A 5.307B 5.312	**470-694 MHz** BROADCASTING 5.149 5.291A 5.294[AddA6] 5.295A 5.296[AddA35]5.300[AddA4] 5.304 5.306 5.307A[AddA1] 5.307B[AddA8] 5.312	DTT broadcasting (470-694 MHz) VLBI Observations (608 – 614 MHz) Services ancillary to broadcasting and program making (SAB/SAP) SRD: Wireless Audio Applications Radio Microphones	Any Band IV/V Analogue terrestrial television to migrate to digital terrestrial television RR No. 9.21 applies GE06 Plan applies SAB/SAP: Report ITU-R BT.2338-X and Report ITU-R BT.2344-X Wireless microphones, see Rec. ITU-R BT.1871-X and ETSI EN 300 422
694-790 MHz BROADCASTING MOBILE except aeronautical mobile 5.312A 5.312B 5.317A 5.300 5.312	**694-790 MHz** BROADCASTING MOBILE except aeronautical mobile 5.312A 5.312B 5.317A[IMT*] 5.300[AddA4]	IMT Mobile applications DTT broadcasting SRD: - Services ancillary to broadcasting and program making (SAB/SAP) Broadband PPDR	AU Guidelines on the harmonized use of the DD in Africa applies. Also, Res 646 (rev. WRC-19), Rec. ITU-R M. 2015, Rec. ITU-R M. 1036 and Res. 760 (rev. WRC-19) apply Res. 224 (rev. WRC-19) applies for IMT. The GE06 Plan applies for DTT broadcasting and Other Primary Services (OPS). Furthermore, spectrum assignments and allotments for DTT according to GE06 have been replanned in the band 470 - 694 MHz in most of African Countries. Member states that have not migrated ATT to DTT (ASO) are urged to expedite the process. With respect to SAB/SAP, Report ITU-R BT.2338-X and Report ITU-R BT.2344-X applies. For PPDR Refer to Annex E

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
790-862 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.316B 5.317A BROADCASTING 5.312 5.319	**790-862 MHz** FIXED MOBILE except aeronautical mobile 5.312B 5.316B 5.317A[IMT*] BROADCASTING	IMT Fixed and Mobile applications DTT broadcasting	AU Guidelines on the harmonized use of the DD in Africa applies. The allocation to the mobile is subject to agreement obtained under No. 9.21 with respect to the aeronautical radionavigation service The GE06 Plan applies for DTT broadcasting and Other Primary Services (OPS). Furthermore, spectrum assignments and allotments for DTT according to GE06 have been replanned in the band 470 - 694 MHz in most of African Countries. Member states that have not migrated ATT to DTT (ASO) are urged to expedite the process Resolutions 224 (Rev.WRC-23) and 749 (Rev.WRC-23) apply
862-890 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.317A BROADCASTING 5.322 5.319 5.323	**862-890 MHz** FIXED MOBILE except aeronautical mobile 5.312BI'm not[IMT*] 5.317A[IMT*] BROADCASTING 5.322	862-876 MHz IMT Fixed and Mobile applications SRD applications: - Measurement and Remote-control equipment - Radio frequency identification Wireless Audio applications 876-880 MHz IMT	- This band is paired with 824-849 MH - AU Guidelines on the harmonized use of the DD in Africa applie - Rec. ITU-R SM.1896- - The band (863 – 870 MHz) is used for IoT applications, ETSI EN 300 22 - The band 865-868 MHz is used for RFID Applications - This band is paired with 921-925 MHz. for the GSM- - AU Guidelines on the harmonized use of the DD in Africa applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
890-942 MHz BROADCASTING 5.322 FIXED MOBILE except aeronautical mobile 5.312B 5.317A Radiolocation 5.323	**890-942 MHz** FIXED MOBILE except aeronautical mobile 5.312B 5.317A[IMT*] Radiolocation		This band is paired with 925-960 MHz. AU Guidelines on the harmonized use of the DD in Africa applies AU Guidelines on the harmonized use of the DD in Africa applies Paired with 876-880 MHz AU Guidelines on the harmonized use of the DD in Africa applies Paired with 880-915 MHz AU Guidelines on the harmonized use of the DD in Africa applies
942-960 MHz FIXED MOBILE except aeronautical mobile 5.312B 5.317A BROADCASTING 5.322 5.323	**942-960 MHz** FIXEDP MOBILE except aeronautical mobile 5.312B 5.317A[IMT*] BROADCASTING 5.322	925-960 MHz IMT	Paired with 880-915 MHz AU Guidelines on the harmonized use of the DD in Africa applies
960-1 164 MHz AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A 5.328AA	**960-1 164 MHz** AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A 5.328AA	Distance measuring equipment Secondary surveillance radar 1087.7-1092.3 MHz Automatic Dependent Surveillance-Broadcast (ADS-B)	Res. 425 (Rev.WRC-19) applies (global flight tracking for civil aviation)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Galileo (1164-1214 MHz) GLONASS (1190.3-1213.8 MHz) Aeronautical radionavigation systems: - Distance Measurement Equipment - Surveillance Radar	
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[AddA11] 5.331[AddA20] 5.332	GLONASS (1237.8-1253.8 MHz) GPS (1215.6-1239.6 MHz)	
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 5.332A 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 5.282 5.330[AddA11] 5.331[AddA21] 5.332 5.332A 5.335A	GLONASS (1237.8-1253.8 MHz) Galileo (1260-1300 MHz)	Rec: ITU-R M.2164 applies
1 300-1 350 MHz AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	**1 300-1 350 MHz** AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	Aeronautical radionavigation systems: Ground Base Radar	In making assignments to stations in the frequency band 1330-1350 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
1 350-1 400 MHz FIXED MOBILE RADIOLOCATION 5.149 5.338 5.338A 5.339	**1 350-1 400 MHz** FIXED MOBILE RADIOLOCATION 5.149 5.338A 5.339	1 350-1 375 MHz Fixed links (duplex) Land Mobile Service Applications: Wireless Audio Applications Radio Microphones /Services ancillary to broadcasting and program making (SAB/SAP)	Paired with 1492-1517 MHz REC ITU- R F 1242 In making assignments to stations in the frequency band 1350-1375 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149 Resolution 750 (Rev.WRC-19) applies
		1 375-1 400 MHz Fixed links (duplex) Land Mobile Service Applications: Wireless Audio Applications Radio Microphones /Services ancillary to broadcasting and program making (SAB/SAP)	Paired with 1427-1452 MHz REC ITU- R F 1242 In making assignments to stations in the frequency band 1375-1400 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
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	Radio Astronomy (Hydrogen line and continuum observations)	All emissions are prohibited in this band.
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 5.341A[IMT*] 5.338A 5.341	1 427-1 452 MHz Fixed links (duplex) IMT	Paired with 1375-1400 MHz; REC ITU- R F 1242/ REC ITU- R F 701 Identified for IMT (Rec.1036) Res.223 (Rev. WRC-19) applies for IMT. Resolution 750 (Rev.WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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[IMT*] 5.338A 5.341	IMT Fixed service applications	Res.223 (Rev. WRC-19) applies for IMT. Resolution 750 (Rev.WRC-19) applies REC ITU-R M.1036 REC ITU- R F 1242/ REC ITU- R F 701
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[IMT45] BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345	1 452-1 467 MHz Terrestrial Digital Audio Broadcasting (T-DAB) IMT	Res. 223 (Rev.WRC-19) applies for IMT REC ITU- R F 1242/ REC ITU- R F 701
		1 467-1 492 MHz Satellite Digital Audio Broadcasting (S-DAB) IMT Fixed links	Res.223 (Rev. WRC-19) applies for IMT. Use by the broadcasting-satellite service, is subject to Resolution 528 (Rev.WRC-19).
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[IMT*] 5.341	1 492-1 517 MHz Fixed links (dual frequency) IMT	Paired with 1350-1375 MHz; REC ITU- R F 1242/ REC ITU- R F 701 Res.223 (Rev. WRC-19) applies for IMT.
		1 517-1 518 MHz Fixed links (single frequency) IMT	Res. 223 (Rev.WRC-19) applies for IMT. REC ITU- R F 1242/ REC ITU- R F 701

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	1518-1525 MHz Fixed links (single frequency) Mobile satellite systems	REC ITU- R F 1242/ REC ITU- R F 701
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 Earth exploration-satellite Mobile except aeronautical mobile 5.349[DcoS3] 5.341 5.351 5.352A[NotClP7] 5.354	Fixed links Mobile satellite systems	This band also carries Maritime safety Information (MSI) for vessels in Navigation Area Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. REC ITU- R F 1242/ REC ITU- R F 701 RR No 9.11A applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 Fixed Mobile except aeronautical mobile 5.341 5.351 5.354	GMDSS (SAT-COM) in 1 530–1 544 MHz Mobile satellite systems Fixed applications	In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies. Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. REC ITU- R F 1242/ REC ITU- R F 701 This band also carries Maritime safety Information (MSI) for vessels in Navigation Area RR No 9.11A 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 5.355[AddA9] 5.356 5.357 5.357A 5.359[AddA6]	Mobile satellite systems GMDSS (SAT-COM) in 1 530–1 544 MHz / (D&S-OPS) in 1544–1545 MHz	In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies. This band also carries Maritime safety Information (MSI) for vessels in Navigation Area Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. Resolution 222 (Rev.WRC-23) apply RR No 9.11A applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
1 559-1 610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	**1 559-1 610 MHz** AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341	Galileo (1559.42-1591.42 MHz) GLONASS (1592.9-1610.5 MHz) GPS (1563.42-1587.42 MHz)	
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 5.355[AddA9] 5.359[AddA6] 5.364 5.366 5.367 5.368 5.369[DcoS11] 5.371 5.372	GLONASS (1592.9-1610.5 MHz)	This band is designated world-wide for the MSS. Paired with 2483.5-2484.1 MHz for some systems.
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 5.355[AddA9] 5.359[AddA6] 5.364 5.366 5.367 5.368 5.369[DcoS11] 5.371 5.372	Radio Astronomy (Observation of OH radical and molecules)	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 5.372A	**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[AddA9] 5.359[AddA6] 5.364 5.365 5.366 5.367 5.368 5.369[DcoS10] 5.371 5.372 5.372A	Mobile satellite systems 1 610-1 626.5 MHz is use in some country to the radiodetermination-satellite service (Earth-to-space) on the primary basis	Paired with 1593-1594 MHz for aeronautical public correspondence RR No 9.11A and No 9.21 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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[AddA9] 5.359[AddA6] 5.364 5.365 5.366 5.367 5.368 5.369[DcoS11] 5.371 5.372	Used for distress and safety purposes in the Earth-to-space and space-to-Earth directions in the maritime mobile-satellite service Mobile satellite systems	Paired with 1593-1594 MHz for aeronautical public correspondence RR No 9.11A and No 9.21 apply
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 5.355[AddA9] 5.357A 5.359[AddA6] 5.374 5.375 5.376	GMDSS (SAT-COM) in 1626.5 – 1645.5 MHz GMDSS (D&S-OPS) in 1645.5-1646.5 MHz Mobile satellite systems	In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS); Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. RR No 9.11A apply Resolution 222 (Rev.WRC-23) applies.
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	Radio Astronomy (Observation of OH radical and molecules)	REC ITU- R F 701 RR No 9.11A apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379[AddA1] 5.379A	Fixed Applications Radio Astronomy (Observation of OH radical and molecules)	REC ITU- R F 701
1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C 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 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379[AddA1] 5.379A	Radio Astronomy (Observation of OH radical and molecules)	REC ITU- R F 701
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	Radio Astronomy (Observation of OH radical and molecules)	REC ITU- R F 701 Resolution 744 (Rev.WRC-23) apply
1 670-1 675 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	**1 670-1 675 MHz** METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.380A		REC ITU- R F 701 Resolution 744 (Rev.WRC-23) apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Fixed Applications	REC ITU- R F 701
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[DcoS7]		REC ITU- R F 701
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	Fixed links (single frequency)	REC ITU- R F 701

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
1 710-1 930 MHz FIXED MOBILE 5.384A 5.388 5.388A 5.149 5.341 5.385 5.386 5.387	**1 710-1 930 MHz** FIXED MOBILE 5.384A[IMT*] 5.388 [IMT*] 5.388A[IMT*] 5.149 5.341 5.385	1 710-1 785 MHz IMT bands 1 710-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 are identified for the use by high altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS).	Resolution 212 (Rev.WRC-23) apply Resolution 221 (Rev.WRC-23) applies Res.223 (Rev. WRC-23) applies for IMT. Paired with 1805-1880 MHz. REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098 In making assignments to stations in the frequency band 1718.8-1722.2 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
		1785-1805 MHz BFWA	
		1 805-1 880 MHz IMT	Paired with 1710-1785 MHz
		1 880-1 900 MHz FWA DECT Cordless Telecommunications	1 880-1 900 MHZ DECT Cordless Telecommunications based audio applications
		1 900-1 920 MHz FWA IMT (terrestrial)	
		1 920-1 980 MHz IMT (terrestrial)	Paired with 2110-2170 MHz

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
1 930-1 970 MHz FIXED MOBILE 5.388 5.388A	**1 930-1 970 MHz** FIXED MOBILE 5.388 [IMT*] 5.388A[IMT*]	IMT	Res.223 (Rev. WRC-23) applies for IMT. Resolution 221 (Rev.WRC-23) applies REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098
1 970-1 980 MHz FIXED MOBILE 5.388 5.388A	**1 970-1 980 MHz** FIXED MOBILE 5.388 [IMT*] 5.388A[IMT*]	IMT	Res.223 (Rev. WRC-19) applies for IMT. Resolution 221 (Rev.WRC-23) applies REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098
1 980-2 010 MHz FIXED MOBILE 5.388 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.389A 5.389B 5.389F	**1 980-2 010 MHz** FIXED MOBILE 5.388[IMT*] MOBILE-SATELLITE (Earth-to-space) 5.351A 5.389A 5.389B 5.389F[UseNotClP5]	IMT (terrestrial and satellite) (1980-2010 MHz) Fixed Applications	Paired with 2170 - 2200 MHz. The development of satellites for IMT services to be monitored. Res 212 (Rev. WRC-23) applies. Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098 Res.223 (Rev. WRC-23) applies for IMT. Resolution 221 (Rev.WRC-23) applies Resolution 716 (Rev.WRC-23) applies RR No 9.11A applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
2 010-2 025 MHz FIXED MOBILE 5.388 5.388A	**2 010-2 025 MHz** FIXED MOBILE 5.388 [IMT*] 5.388A[IMT*]	IMT (terrestrial) (2010-2025 MHz) Fixed Applications	TDD Res.223 (Rev. WRC-23) applies for IMT. Resolution 221 (Rev.WRC-23) applies REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098
2 025-2 110 MHz SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	**2 025-2 110 MHz** SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	Fixed links (2025-2110 MHz paired with 2200-2285 MHz) Earth exploration satellite applications	Radio Frequency channel arrangement according to Rec. ITU-R F.1098. REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098
2 110-2 120 MHz FIXED MOBILE 5.388 5.388A SPACE RESEARCH (deep space) (Earth-to-space)	**2 110-2 120 MHz** MOBILE 5.388 [IMT*] 5.388A [IMT*] SPACE RESEARCH (deep space) (Earth-to-space)	IMT (terrestrial) (2110-2170 MHz)	Paired with 1920-1980 MHz Rec. ITU-R M.1036 applies Resolution 221 (Rev.WRC-23) applies Res.223 (Rev. WRC-19) applies for IMT.
2 120-2 160 MHz FIXED MOBILE 5.388 5.388A	**2 120-2 160 MHz** FIXED MOBILE 5.388 [IMT*] 5.388A [IMT*]	IMT	Res.223 (Rev. WRC--23) applies for IMT. Resolution 221 (Rev.WRC-23) applies
2 160-2 170 MHz FIXED MOBILE 5.388 5.388A	**2 160-2 170 MHz** FIXED MOBILE 5.388 [IMT*] 5.388A [IMT*]	IMT	Res.223 (Rev. WRC-23) applies for IMT.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
2 170-2 200 MHz FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A 5.389A 5.389F	**2 170-2 200 MHz** FIXED MOBILE 5.388 [IMT*] MOBILE-SATELLITE (space-to-Earth) 5.351A 5.389A 5.389F[UseNotClP5]	IMT (satellite) (2170-2200 MHz) Fixed Applications	Paired with 1980-2010 MHz. The development of satellites for IMT services to be monitored. Rec. ITU-R M.1036 applies Res 212 (Rev. WRC-23) applies. Existing in-band recommended use for non-terrestrial complementarity to MOBILE as per 3GPP Release 17. Res.223 (Rev. WRC-23) applies for IMT. REC ITU- R F 701/ REC ITU- R F 382/ REC ITU- R F 1098
2 200-2 290 MHz SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	**2 200-2 290 MHz** SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	Fixed links (2025-2110 MHz paired with 2200-2285 MHz) Earth exploration satellite applications BFWA (2 285-2 300 MHz)	Radio Frequency channel arrangement according to Rec. ITU-R F.1098.
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)	BFWA (2 285-2 300 MHz)	
2 300-2 450 MHz FIXED MOBILE 5.384A Amateur Radiolocation	**2 300-2 450 MHz** FIXED MOBILE 5.384A[IMT*] Amateur Radiolocation	2300-2400 MHz Fixed links PTP/PTMP IMT (TDD) BFWA	Fixed paired with 2400-2500 MHz IMT Radio Frequency Channel arrangement according to Rec. ITU-R M.1036

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
5.150 5.282 5.395	5.150 5.282	2400-2500 MHz Fixed links PTP/PTMP SRD: - Wireless LANs (2400-2483.5 MHz) - Measurement and Remote-control equipment - Radio frequency identification - Radio determination applications	FS paired with 2300-2400 MHz. REC ITU- R F 701/ REC ITU- R F 746 / REC ITU- R F 1243 ISM band (2 400-2 500[5] MHz) centre frequency 2450 MHz. Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X Res.223 (Rev. WRC--23) applies for IMT. RR. 15.13 apply
2 450-2 483.5 MHz FIXED MOBILE Radiolocation 5.150	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150		REC ITU- R F 701/ REC ITU- R F 746 / REC ITU- R F 1243 RR 15.13 applies
2 483.5-2 500 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION SATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A 5.150 5.368 5.372A 5.399 5.401 5.402	**2 483.5-2 500 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION SATELLITE (space-to-Earth) 5.398 Radiolocation 5.150 5.368 5.372A 5.399 5.401[SpNt12] 5.402	1 610-1 626.5 MHz : aeronautical radionavigation-satellite service and the aeronautical mobile-satellite (R) 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) 1 621.35-1 626.5 MHz : maritime mobile-satellite service	REC ITU- R F 701/ REC ITU- R F 746 / REC ITU- R F 1243 RR No. 4.10 and No. 5.367 apply resolves 5 of Resolution 365 (WRC-23) RR. 15.13 apply RR No.9.11 and No. 9.21 apply

[5] In some countries, the upper limit is 2 483.5 MHz

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A 5.412	**2 500-2 520 MHz** FIXED 5.410 MOBILE except aeronautical mobile 5.384A[IMT*] 5.409A[IMT*]	BFWA (2500-2690 MHz) 2500-2690 MHz identified for use by (IMT) base stations (HIBS) IMT (2500-2690 MHz) Radio Astronomy (Continuum measurements and galactic studies) (2655 – 2690 MHz)	Res.223 (Rev. WRC-23) applies for IMT. Resolution **218 (WRC-23)** apply.
2 520-2 655 MHz BROADCASTING-SATELLITE 5.413 5.416 FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A 5.339 5.412 5.418B 5.418C	**2 520-2 655 MHz** BROADCASTING-SATELLITE 5.413 5.416 FIXED 5.410 MOBILE except aeronautical mobile 5.384A[IMT*] 5.409A[IMT*] 5.339 5.418B 5.418C	IMT (2500-2690 MHz) 2500-2690 MHz identified for use by (IMT) base stations (HIBS) BFWA (2500-2690 MHz)	Res.223 (Rev. WRC-23) applies for IMT. Resolution **218 (WRC-23)** apply. REC ITU- R F 701/ REC ITU- R F 1243 RR of No.9.12 and No. 9.13 apply
2 655-2 670 MHz BROADCASTING-SATELLITE 5.208B 5.413 5.416 FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 655-2 670 MHz** BROADCASTING-SATELLITE 5.208B 5.413 5.416 FIXED 5.410 MOBILE except aeronautical mobile 5.384A[IMT*] 5.409A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	IMT (2500-2690 MHz) 2500-2690 MHz identified for use by (IMT) base stations (HIBS) BFWA (2500-2690 MHz)	Res.223 (Rev. WRC-19) applies for IMT. REC ITU- R F 701/ REC ITU- R F 1243
2 670-2 690 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 670-2 690 MHz** FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.409A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	IMT (2500-2690 MHz) 2500-2690 MHz identified for use by (IMT) base stations (HIBS) BFWA (2500-2690 MHz)	Res.223 (Rev. WRC-19) applies for IMT. REC ITU- R F 701/ REC ITU- R F 1243

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
2 690-2 700 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	**2 690-2 700 MHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422[AddA14]	Radio Astronomy (Continuum measurements and galactic studies)	
2 700-2 900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	**2 700-2 900 MHz** AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	Aeronautical radionavigation radars : - PSR (primary surveillance radar) - Meteorological 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	Aeronautical radionavigation radars: - PSR (primary surveillance radar) - Meteorological radar	
3 100-3 300 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	**3 100-3 300 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149		In making assignments to stations in the frequency band 3100-3300 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
3 300-3 400 MHz RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	**3 300-3 400 MHz** RADIOLOCATION 5.149 5.429[AddA12] 5.429A [AddA40] 5.429B[IMT48]	IMT Radiolocation service in some African countries	Res. 223 (Rev.WRC-23) applies. IMT Radio Frequency Channel arrangement according to Rec. ITU-R M.1036 Report ITU-R M.2481 may be consulted In making assignments to stations in the frequency band 3300-3400 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
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 FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A[IMT*] Radiolocation	BFWA IMT (3400-3600 MHz)	RR of No.9.21 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
3 600 - 3 800 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433B 5.434A 5.434B 5.435A	**3 600 - 3 800 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433B[IMT6] 5.434A 5.434B[IMT43] 5.435A[DcoS6]	Fixed services for PtP in the range 3600-4200 MHz Fixed-satellite (space-to-Earth) for PtP/VSAT/SNG in the range 3600-4200 MHz BFWA in the range 3600-3800MHz IMT The frequency band 3700 – 3800 MHz is not identified for IMT in 6 African countries. The frequency band 3600-3800 MHz is identified for IMT in some countries	The channelling arrangement for PTP links in this band is based on Rec. ITU-R F.635 ITU- R F 1488/ REC ITU- R F 635 Resolution 246 (WRC-19) applies for BFWA. Some administrations are considering the use of the frequency band 3600 - 3800 MHz for future systems operating in the mobile service. No. 5.434A shall apply RR of No.9.17, No 9.18 and No 9.21 apply
3 800 - 4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth) Mobile	**3 800 - 4 200 MHz** FIXED FIXED-SATELLITE (space-to-Earth) Mobile		
4 200-4 400 MHz AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440	**4 200-4 400 MHz** AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.440	Radio altimeters on board aircraft	
4 400-4 500 MHz FIXED MOBILE 5.440A	**4 400-4 500 MHz** FIXED MOBILE		REC ITU- R F 1099

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Fixed links SRD: Reservoir Level Probing Radar (RLPR)	The band 4 500-4 800 MHz is part of the APP30B Plan (FSS space-to-Earth). Refer to Annex C. REC ITU- R F 1099 Ultra-wideband applications (UWB): see Rec. ITU-R SM.1896-X, Rec. ITU-R SM.1755and Report ITU-R SM.2153-X
4 800-4 990 MHz FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443	**4 800-4 990 MHz** FIXED MOBILE 5.441B[IMT 29]5.442 Radio Astronomy 5.149 5.339	IMT Fixed links Radio Astronomy (Observations of formaldehyde (H2CO) interstellar clouds) Mobile broadband other than IMT	Res. 223 (Rev.WRC-233) applies. RR of No 9.21 apply
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		REC ITU- R F 1099
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)		

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
5 010-5 030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	**5 010-5 030 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B		
5 030-5 091 MHz AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	**5 030-5 091 MHz** AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	Microwave Landing systems.	Resolution 114 (Rev.WRC-15) apply
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		Resolution 114 (Rev.WRC-15) apply
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 5.446D 5.447 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[AddA11] 5.446C[AddAx6] 5.447[AddA3] 5.447B 5.447C	Wireless Access Systems (WAS)/RLAN	Refer to 5.369 Resolution **418 (Rev.WRC-19)**. apply Res. 229 (rev. WRC-23)
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	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-23)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
5 255-5 350 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A	**5 255-5 350 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.448A	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-23)
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		
5 470-5 570 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	**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	Wireless Access Systems (WAS)/RLAN	Res. 229 (rev. WRC-23)
5 570-5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452	**5 570-5 650 MHz** MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.452	Wireless Access Systems (WAS)/RLAN Ground-based meteorological radars (5600-5650 MHz)	Res. 229 (rev. WRC-23)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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[AddA36]	Wireless Access Systems (WAS)/RLAN	
5 725-5 830 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455	**5 725-5 830 MHz** FIXED FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.453[AddA36]	BFWA (5725-5850 MHz) SRD applications: - Reservoir Level Probing Radar (RLPR) - RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) - Transport and information control systems (ITS) 5 805-5 815 MHz)	Rec. ITU-R SM.1896-X Rec. ITU-R M.1453 Report ITU-R SM.2153-X RR N 15.13 apply
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 Amateur-satellite (space-to-Earth) 5.150 5.453[AddA36]	BFWA (5725-5850 MHz) SRD applications: Reservoir Level Probing Radar (RLPR)	Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X RR No. 15.13 apply
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) MOBILE 5.150	Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) FIXED links (5850-5925 MHz) SRD: Reservoir Level Probing Radar (RLPR)	FS could be used for temporary OB links. ISM (5725-5875 MHz) Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X RR No. 15.13 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.457D 5.457E 5.457F 5.149 5.440 5.458	**5 925-6 700 MHz** FIXED 5.457[UseC4] FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[SpN9] MOBILE 5.457E[IMT*] 5.149 5.440 5.458	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz) Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) UWB SRD application (6000 - 9000 MHz) Licence-exempt WAS/RLAN in the range 5925 – 6425 MHz. frequency bands 5 925-6 425 MHz and 14-14.5 GHz used by Earth Station onboard vessels (ESV) also allowed under FSS	Resolution 902 (Rev.WRC-23) applies. Resolution 150 (WRC-12) applies. Resolution 220 (WRC-23) applies. Channelling plan for L6 GHz band in accordance with Rec. ITU-R F.383 ATU-R Recommendation 005-X applies in the range (5925 – 6425 MHz) Channelling plan for U6 GHz band in accordance with Rec. ITU-R F.384 Rec. ITU-R SM.1755, Rec. ITU-R SM.1756, Rec. ITU-R SM. 1757and Report ITU-R SM.2153-X In making assignments to stations in the frequency band 6650 – 6675.2 MHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
6 700-7 075 MHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE 5.457D 5.457E 5.457F 5.458 5.458A 5.458B	**6 700-7 075 MHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE 5.457D 5.457E[IMT*] 5.458 5.458A 5.458B	Fixed links - Upper 6 GHz (6425-7110 MHz) IMT (6425-7125 MHz)	Resolution 220 (WRC-23) applies. Rec. ITU-R F.384 applies The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex C. RR No 9.11A and No 9.21 apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
7 075-7 145 MHz FIXED MOBILE 5.457E 5.457F 5.458 5.459	**7 075-7 145 MHz** FIXED MOBILE 5.457E[IMT*] 5.458	Fixed links - Upper 6 GHz (6425-7110 MHz) and Lower 7 GHz (7110-7425 MHz) IMT (6425-7125 MHz)	Resolution 220 (WRC-23) applies. Rec. ITU-R F.384 applies Rec. ITU-R F.385 applies.
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	Fixed links - Lower 7 GHz (7110-7425 MHz)	Rec. ITU-R F.385 applies.
7 190- 7 235 MHz EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	**7 190- 7 235 MHz** EARTH EXPLORATION SATELLITE (Earth-to-Space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458	Fixed links - Lower 7 GHz (7110-7425 MHz)	Rec. ITU-R F.385 applies
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 MOBILE 5.458	Fixed links - Lower 7 GHz (7110-7425 MHz)	Rec. ITU-R F.385 applies.
7 250-7 300 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	**7 250-7 300 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	Fixed links - Lower 7 GHz (7110-7425 MHz) **the** frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis subject to agreement obtained under RR No. 9.21.	Rec. ITU-R F.385 applies. RR N° 9.21 applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
7 300-7 375 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	**7 300-7 375 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz) the frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis subject to agreement obtained under RR No. 9.21	Rec. ITU-R F.385 applies RR N° 9.21 applies
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 5.461AC	**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 5.461AC	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	Rec. ITU-R F.385 applies
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 5.461AC	**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 5.461AC	Fixed links - Upper 7 GHz (7425-7750 MHz)	Rec. ITU-R F.385 applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
7 550-7 750 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	**7 550-7 750 MHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461AC	Fixed links - Upper 7 GHz (7425-7750 MHz)	Rec. ITU-R F.385 applies
7 750-7 900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	**7 750-7 900 MHz** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	Fixed links - Lower 8 GHz (7725-8275 MHz)	Rec. ITU-R F.386 applies
7 900-8 025 MHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	**7 900-8 025 MHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	Fixed links - Lower 8 GHz (7725-8275 MHz) the frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis subject to agreement obtained under RR No. 9.21	Rec. ITU-R F.386/ ITU-R. F.385 applies RR N° 9.21 applies
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 FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	Rec. ITU-R F.386 applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) Earth exploration satellite systems	Rec. ITU-R F.386 applies
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 FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	Fixed links - Lower 8 GHz (7725-8275 MHz) and Upper 8 GHz (8275-8500 MHz)	Rec. ITU-R F.386 applies.
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 MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465	Fixed links - Upper 8 GHz (8275-8500 MHz)	Rec. ITU-R F.386 applies.
8 500-8 550 MHz RADIOLOCATION 5.468 5.469	**8 500-8 550 MHz** RADIOLOCATION 5.468[AddA20]	RADARS 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[AddA20] 5.469A	RADARS e.g. precision airfield approach radars	
8 650-8 750 MHz RADIOLOCATION 5.468 5.469	**8 650-8 750 MHz** RADIOLOCATION 5.468[AddA20]	RADARS e.g. precision airfield approach radars	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
8 750-8 850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	**8 750-8 850 MHz** RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471[AddA4]	RADARS 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	RADARS 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 5.471[AddA4] 5.473A	RADARS 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) 5.474A[UseL3] 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474 5.474D	RADARS e.g. precision airfield approach radars	
9 300-9 500 MHz RADIONAVIGATION 5.475 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475A 5.475B 5.476A	**9 300-9 500 MHz** RADIONAVIGATION 5.475 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475A 5.475B 5.476A	RADARS e.g. precision airfield approach radars	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 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) Fixed 5.477[DcoS12] 5.478A 5.478B		RR No 9.21 and 9.52 apply
9 900-10 000 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5474C RADIOLOCATION Fixed 5.477 5.474D 5.478 5.479	**9 900-10 000 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A[UseL3] 5.474B 5474C RADIOLOCATION Fixed 5.477[DcoS12] 5.474D 5.479	RADARS 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[UseL3] 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	Fixed Links	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
10.4-10.45 GHz FIXED MOBILE RADIOLOCATION Amateur	**10.4-10.45 GHz** FIXED MOBILE RADIOLOCATION Amateur	BFWA – 10.5 GHz (10.15-10.30 GHz)	Paired with 10.50-10.65 GHz Rec. ITU-R F.1568 applies.
10.45-10.5 GHz RADIOLOCATION Amateur Amateur-satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION Amateur Amateur-Satellite 5.481[AddA10]	RADIOLOCATION frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis in some African countries	
10.5-10.55 GHz FIXED MOBILE Radiolocation	**10.5-10.55 GHz** FIXED MOBILE Radiolocation	BFWA – 10.5 GHz (10.50-10.65 GHz)	Paired with 10.15-10.30 GHz Rec. ITU-R F.1568 applies
10.55-10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation	**10.55-10.6 GHz** FIXED MOBILE except aeronautical mobile Radiolocation	BFWA – 10.5 GHz (10.50-10.65 GHz)	Paired with 10.15-10.30 GHz Rec. ITU-R F.1568 applies.
10.6-10.68 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482[UseL7] 5.482A	BFWA – 10.5 GHz (10.50-10.65 GHz) Radio Astronomy (Non-thermal synchrotron and enigmatic quasars)	Rec. ITU-R F.1568 applies. For sharing between EESS (passive) and the fixed and mobile service, Res.751 applies.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 5.483[AddA1]	Non-thermal synchrotron and enigmatic quasars	
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	DTH Applications under the FSS Fixed Links	Rec. ITU-R F.387 applies
10.95-11.2 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.484B (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 MOBILE except aeronautical mobile	DTH Applications under the FSS Fixed Links	Rec. ITU-R F.387 applies
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	DTH Applications under the FSS Fixed links	Rec. ITU-R F.387 applies
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	Fixed links - 11 GHz (10.7-11.7 GHz) Fixed-satellite downlinks (PTP/VSAT/SNG) DTH Applications under the FSS	Rec. ITU-R F.387 applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
11.7-12.5 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	**11.7-12.5 GHz** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	Fixed Links Broadcasting satellite systems	This band is available for BSS in accordance with Appendix 30 of ITU RR. Refer to Annex C. RR No. 9.12 apply
12.5-12.75 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494 5.495 5.496	**12.5-12.75 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494[AddA23] 5.495[AddA2]	FSS uplinks (VSAT/SNG) (12.5-12.75 GHz) Aeronautical Earth Stations/ ESV/ESIM Applications NGSO FSS Fixed links	Article 9.12 applies Res. 155 (WRC – 15) applies
12.75-13.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 5.496A MOBILE Space research (deep space) (space-to-Earth)	**12.75-13.25 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.441 5.496A MOBILE Space research (deep space) (space-to-Earth)	Fixed links - 13 GHz (12.75-13.25 GHz) (Earth-to-space) Earth Stations In Motion	Channelling plan for 13 GHz band in accordance with Rec. ITU-R F.497 The band 12.75-13.25 GHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex C. Article 9.12 applies Resolution 121 (WRC-23) apply
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	Airborne Doppler Radar	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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[AddA16] 5.501B	SRD: Radio determination Applications	Report ITU-R SM.2153-X
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) 5.500[AddA16] 5.501B	RADIOLOCATION	
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 Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.500[AddA16] 5.502 5.503	FSS uplinks (PTP/VSAT/SNG) RADIOLOCATION	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 5.504C 5.506A Space research 5.504A 5.505	**14-14.25 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.504C 5.506A Space Research 5.504A 5.505[AddA16]	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications NGSO FSS Fixed links	Resolution 902 (Rev.WRC-23) applies. Rec. ITU-R M.1643 applies.
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[UseC9] 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.508A Space Research 5.504A 5.505[AddA16] 5.508[AddA1]	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Resolution 902 (Rev.WRC-23) applies. Rec. ITU-R M.1643 applies.
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 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Radionavigation-satellite 5.504A	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Resolution. 902 (Rev.WRC-23) apply. Rec. ITU-R M.1643-0 applies. RR Nos. 5.29, 5.30 and 5.31 apply.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	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 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Space research (space-to-Earth) 5.504A	FSS uplinks (PTP/VSAT/SNG) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed links	Resolution. 902 (Rev.WRC-23) apply. Rec. ITU-R M.1643-0 applies. RR Nos. 5.29, 5.30 and 5.31 apply.
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 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B[UseC9] 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) 5.504B[UseC1] 5.506A 5.509A[UseC9] Radio astronomy 5.149 5.504A	FSS uplinks (PTP/VSAT/SNG) Radio Astronomy (non-thermal synchrotron and enigmatic quasars) Aeronautical Earth Stations/ ESV/ESIM Applications Fixed Links	Resolution. 902 (Rev.WRC-23) apply. Rec. ITU-R M.1643-0 applies. RR Nos. 5.29, 5.30 and 5.31 apply.
14.5-14.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F5.510 MOBILE Space research 5.509G	**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	Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with Rec. ITU-R F.636 The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some countries. Refer to Annex C.
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 MOBILE Space research 5.509G	Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with Rec. ITU-R F.636 The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some countries. Refer to Annex C.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
14.8-15.35 GHz FIXED MOBILE SPACE RESEARCH 5.510A 5.339	**14.8-15.35 GHz** FIXED MOBILE SPACE RESEARCH 5.510A 5.339	Fixed links - 15 GHz (14.5-15.35 GHz) 14.8-15.35 GHz: Space Research Service	Channelling plan for 15 GHz band in accordance with Rec. ITU-R F.636 Resolution 678 (WRC-23).
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 5.511[AddA5]	Radio Astronomy (for observation of non-thermal synchrotron sources and quasars)	
15.4 - 15.41 GHz AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F	**15.4 - 15.41 GHz** AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F		
15.41 - 15.43 GHz AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G	**15.41 - 15.43 GHz** AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G	Radio altimeters / Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
15.43 - 15.63 GHz AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G 5.511C	**15.43 - 15.63 GHz** AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G 5.511C	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10) RR No 9.11A apply Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2 Recommendation ITU-R S.1340-0
15.63 - 15.7 GHz AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G	**15.63 - 15.7 GHz** AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.511E 5.511F Aeronautical mobile (OR) 5.511G	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10) Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
15.7-16.6 GHz RADIOLOCATION 5.512 5.513	**15.7-16.6 GHz** RADIOLOCATION 5.512[AddA17]	Doppler Radars	ICAO Guidelines on Radiocommunications (Annex 10)
16.6-17.1 GHz RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513 5.515	**16.6-17.1 GHz** RADIOLOCATION Space Research (deep space)(Earth-to-space) 5.512[AddA17] 5.515		Provisions of § 1 of Annex 4 of Appendix 30A apply
17.1-17.2 GHz RADIOLOCATION 5.512 5.513 5.515	**17.1-17.2 GHz** RADIOLOCATION 5.512[AddA17] 5.515	WAS/RLAN (17.1-17.3 GHz)	Provisions of § 1 of Annex 4 of Appendix 30A
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[AddA17] 5.513A	WAS/RLAN (17.1-17.3 GHz)	
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[AddA8]	Broadcasting satellite systems feeder links	The band 17.3-17.7 GHz is part of the APP30A Plan (Feeder Links for BSS) for many countries; refer to Annex C. RR No. **9.12** apply Resolution 143 (Rev.WRC-19) applies for HDFS.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	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 MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS) Broadcasting satellite systems feeder links	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 RR No. 9.12 apply Resolution 169 (Rev.WRC-23) applies for ESIM.
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 (Earth-to-space) 5.520 MOBILE 5.519	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 RR No. 9.12 apply Resolution 169 (Rev.WRC-23) applies for ESIM.) applies for ESIM.
18.4-18.6 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B INTER-SATELLITE 5.521A MOBILE	**18.4-18.6 GHz** FIXED FIXED – SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A 5.517B MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 RR No. 9.12 apply Resolution 169 (Rev.WRC-23) applies for ESIM.
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 FIXED – SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C[UseC5]	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 RR No. 9.12 apply Resolution 169 (Rev.WRC-23) applies for ESIM.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
18.8-19.3 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.517B 5.523A INTER-SATELLITE 5.521A MOBILE	**18.8-19.3 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.517B 5.523A MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) Space Stations ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 Resolution 679 (WRC-23) RR No. 9.12 apply Resolution 169 (Rev.WRC-23). applies for ESIM.
19.3-19.7 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.517A 5.523B 5.523C 5.523E INTER-SATELLITE 5.521A 5.523DA MOBILE	**19.3-19.7 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.517A 5.523B 5.523C 5.523E INTER-SATELLITE 5.521A 5.523DA MOBILE	Fixed links - 18 GHz (17.7-19.7 GHz) ESIM (under the FSS)	Channelling plan for 18 GHz band in accordance with Rec. ITU-R F.595 RR of No. 9.12 apply Resolution 169 (Rev.WRC-23) applies for ESIM.
19.7-20.1 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A Mobile-satellite (space-to-Earth) 5.524[AddA18]	ESIM (under the FSS)	Resolution 143 (Rev.WRC-19) applies for HDFS Resolution 155 (Rev.WRC-19) apply Resolution 156 (WRC-15) applies for ESIM.
20.1-20.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A INTER-SATELLITE 5.521A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.517B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524[AddA18] 5.525 5.526 5.527 5.528	ESIM (under the FSS)	Resolution 143 applies for HDFS Resolution 155 (Rev.WRC-19) apply Resolution 156 (WRC-15) applies for ESIM. Resolution 123 (WRC-23

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
20.2-21.2 GHz FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524 5.529A	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.524[AddA18] 5.529A	Fixed Satellite Systems	
21.2-21.4 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637
21.4-22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	**21.4-22 GHz** FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz) Broadcasting satellite systems	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637 Recommendation ITU-R P.452 and Recommendation ITU-R BO.1898
22 - 22.2 GHz FIXED MOBILE except aeronautical mobile (R) 5.531A 5.531B 5.531C 5.531D 5.531F 5.149	**22 - 22.2 GHz** FIXED MOBILE except aeronautical mobile (R) 5.531A 5.531B 5.531C 5.531D 5.531F 5.149	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz) 22-22.2 GHz : aeronautical mobile (OR) service	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637 In making assignments to stations in the frequency band 22.01-22.21 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149 ITU-R RA.769-2 and ITU-R RA.1513-2

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
22.2 - 22.21 GHz FIXED MOBILE except aeronautical mobile 5.149	**22.2 - 22.21 GHz** FIXED MOBILE except aeronautical mobile 5.149		
22.21-22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.1495.532	**22.21-22.5 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637 In making assignments to stations in the frequency band 22.21-22.5 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
22.5-22.55 GHz FIXED MOBILE	**22.5-22.55 GHz** FIXED MOBILE	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637
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 MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149	Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637 In making assignments to stations in the frequency band 22.81 – 22.86 GHz and 23.07 – 23.12 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
23.15-23.55GHz FIXED INTER-SATELLITE 5.338A MOBILE	**23.15-23.55 GHz** FIXED INTER-SATELLITE 5.338A MOBILE	Fixed links	
23.55-23.6 GHz FIXED MOBILE	**23.55-23.6 GHz** FIXED MOBILE	Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with Rec. ITU-R F.637

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observation of ammonia and continuum observations)	
24-24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE 5.150	AMATEUR AMATEUR-SATELLITE ISM (24.0-24.25 GHz) SRD applications (24-24.25 GHz)	ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X RR No. 15.13 apply
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	SRD: Reservoir Level Probing Radar (RLPR)	ISM band (24.0-24.25 GHz) Centre frequency 24.125 GHz Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X RR No. 15.13 apply
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[IMT*]	Fixed links (24.25 – 26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 26 GHz). Temporary fixed links for ENG/OB Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
24.45-24.65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	**24.45-24.65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB[IMT*]	Fixed links - 26 GHz (24.25-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz))	Channelling in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 26 GHz) Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies
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 FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB[IMT*]	Fixed links - 26 GHz (24.25-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 26 GHz). Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies
24.75-25.25 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	**24.75-25.25 GHz** FIXED FIXED SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB[IMT*]	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 26 GHz). Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
25.25-25.5 GHz FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	**25.25-25.5 GHz** FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB[IMT*] Standard frequency and time signal-satellite (Earth-to-space)	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with Rec. ITU-R F.748. (Note: In this recommendation, this band is known as 26 GHz). Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies
25.5-27 GHz EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B[UseL8] FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB[IMT*] SPACE RESEARCH (space-to-Earth) 5.536C[UseL16] Standard frequency and time signal-satellite (Earth-to-space) 5.536A	Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz) IMT (24.25-27.5 GHz)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 26 GHz). Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.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[IMT*]	IMT (24.25-27.5 GHz)	Resolution 242 (Rev.WRC-23) applies Resolution 750 (Rev.WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
27.5-28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539 INTER-SATELLITE 5.521A MOBILE 5.538 5.540	**27.5-28.5 GHz** FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.539 MOBILE 5.538 5.540	Fixed links – 28 GHz (27.5-29.5 GHz) ESIM (under the FSS)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 28 GHz) Resolution 143 (Rev.WRC-19) applies for HDFS. The band 27.5-30 GHz may be used by the FSS for BSS feeder links Resolution 169 (WRC-23) applies for ESIM. Resolution 123 (WRC-23) apply
28.5-29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.517B 5.523A 5.539 INTER-SATELLITE 5.521A 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 5.517B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	Fixed links – 28 GHz (27.5-29.5 GHz) ESIM (under the FSS)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 28 GHz) Resolution 143 (Rev.WRC-19) applies for HDFS. The band 27.5-30 GHz may be used by the FSS for BSS feeder links Resolution 169 (WRC-23) applies for ESIM. Resolution 123 (WRC-23) apply

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 INTER-SATELLITE 5.521A 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 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	Fixed links ESIM (under the FSS)	Channelling plan in accordance with Rec. ITU-R F.748 (Note: In this recommendation, this band is known as 28 GHz) Resolution 143 (Rev.WRC-19) applies for HDFS. Resolution 169 (WRC-23) applies for ESIM.
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539 INTER-SATELLITE 5.521A Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	**29.5-29.9 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542[AddA15]	ESIM (under the FSS)	Resolution 155 (Rev.WRC-19) applies Resolution 143 (Rev.WRC-19) applies for HDFS. Resolution 156 (Rev.WRC-23) applies for ESIM. Resolution 123 (WRC-23) applies
29.9-30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 5.539 INTER-SATELLITE 5.521A MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	**29.9-30 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.517B 5.527A 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[AddA15]	ESIM (under the FSS)	Resolution 155 (Rev.WRC-19) applies Resolution 143 (Rev.WRC-19) applies for HDFS. Resolution 156 (Rev.WRC-23) applies for ESIM. Resolution 123 (WRC-23) applies
30-31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.529A 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) 5.529A 5.542(AddA15)		RR of Nos. 21.3 and 21.5 apply Resolution 750 (Rev.WRC-19) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 5.149	**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	Fixed links Fixed satellite systems	Channelling plan in accordance with Rec. ITU-R F.746 (Note: In this recommendation, this band is known as 31 GHz). Resolution 750 (Rev.WRC-19) applies Resolution 167 (Rev.WRC-23) applies for HAPS
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	Radio Astronomy (Continuum Observations)	
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[DcoS4]	Radio Astronomy (Continuum Observations)	
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 RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Channelling plan in accordance with Rec. ITU-R F.1520 (Note: In this recommendation, this band is known as 32 GHz). Res.75 applies for HDFS. Recommendation 707 (Rev.WRC-23)).

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
32-32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	**32-32.3 GHz** FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Channelling plan in accordance with Rec. ITU-R F.1520 (Note: In this recommendation, this band is known as 32 GHz). Res.75 applies for HDFS. Recommendation 707 (Rev.WRC-23)).
32.3-33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	**32.3-33 GHz** FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Channelling plan in accordance with Rec. ITU-R F.1520 (Note: In this recommendation, this band is known as 32 GHz). Res.75 applies for HDFS. Recommendation 707 (Rev.WRC-23)).
33-33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E	**33-33.4 GHz** FIXED 5.547A RADIONAVIGATION 5.547	Fixed links (PTP/PTMP) (31.8-33.4 GHz)	Channelling plan in accordance with Rec. ITU-R F.1520 (Note: In this recommendation, this band is known as 32 GHz). Res.75 applies for HDFS.
33.4-34.2 GHz RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION 5.549[AddA13]		
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[AddA13]		

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
34.7-35.2 GHz RADIOLOCATION Space research 5.550 5.549	**34.7-35.2 GHz** RADIOLOCATION Space Research 5.549[AddA13]		
35.2-35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION 5.549[AddA13]		
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[AddA13] 5.549A		
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		In making assignments to stations in the frequency band 36.43-36.5 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149 Resolution 752 (WRC-07) apply
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[IMT*] SPACE RESEARCH (space-to-Earth) 5.547	Fixed links - 38 GHz (37.0-39.5 GHz) IMT (37-43.5 GHz)	Res.75 applies for HDFS. Resolution 243 (Rev.WRC-23) applies Channelling plan in accordance with Rec. ITU-R F.749 (Note: In this recommendation, this band is known as 38 GHz)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
37.5-38 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C 5.550CA MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	**37.5-38 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B[IMT*] SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	Fixed links - 38 GHz (37.0-39.5 GHz) IMT (37-43.5 GHz)	Res.75 applies for HDFS. **Resolution 243 (Rev.WRC-23)** applies for IMT Channelling plan in accordance with Rec. ITU-R F.749 (Note: In this recommendation, this band is known as 38 GHz) **Resolution 770 (WRC-**23), and RR of No. **22.2** apply
38-39.5 GHz FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth) 5.547	**38-39.5 GHz** FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B[IMT*] Earth exploration-satellite (space-to-Earth) 5.547	Fixed links - 38 GHz (37.0-39.5 GHz) IMT (37-43.5 GHz)	Resolution 243 (Rev.WRC-23) applies for IMT Channelling plan in accordance with Rec. ITU-R F.749 (Note: In this recommendation, this band is known as 38 GHz) Res.75 applies for HDFS. Resolution 168 (WRC-23) applies for HAPS
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 FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B[IMT*] MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E	IMT (37-43.5 GHz) Fixed Links	Res.75 applies for HDFS. **Resolution 143 (Rev.WRC-19)** apply for HDFS. Resolution 243 (Rev.WRC-23) applies for IMT Resolution 243 (Rev.WRC-23) applies for IMT **RR of Nos. 9.12 and 22.2 apply**

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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** EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B[IMT*] MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	IMT (37-43.5 GHz)	Resolution 143 (Rev.WRC-19). apply for HDFS. Resolution 243 (Rev.WRC-23) applies for IMT RR of Nos. 9.12 and 22.2 apply
40.5-41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	**40.5-41 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B[IMT*] BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547	Fixed links (40.5 – 43.5 GHz) IMT (37-43.5 GHz)	BFWA or MWS (40.5-43.5 GHz) Res.75 applies for HDFS. Channelling plan in accordance with Rec. ITU-R F.2005 (Note: In this recommendation, this band is known as 42 GHz) Resolution 243 (Rev.WRC-23) applies for IMT
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 FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B[IMT*] BROADCASTING BROADCASTING-SATELLITE Aeronautical Mobile Maritime Mobile 5.547 5.551H 5.551I	Fixed links (40.5 – 43.5 GHz) IMT (37-43.5 GHz)	BFWA or MWS (40.5-43.5 GHz) Res.75 applies for HDFS. Channelling plan in accordance with Rec. ITU-R F.2005 (Note: In this recommendation, this band is known as 42 GHz) Resolution 243 (Rev.WRC-23) applies for IMT

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
42.5-43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY 5.149 5.547	**42.5-43.5 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except Aeronautical Mobile 5.550B[IMT*] RADIO ASTRONOMY 5.149 5.547	Fixed links (40.5 – 43.5 GHz) IMT (37-43.5 GHz) Radio Astronomy (Observation of silicon monoxide)	BFWA or MWS (40.5-43.5 GHz) Res.75 applies for HDFS. Resolution 243 (Rev.WRC-23) applies for IMT Channelling plan in accordance with Rec. ITU-R F.2005 (Note: In this recommendation, this band is known as 42 GHz)
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[IMT37] MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	IMT (45.5-47 GHz)	Resolution 244 (Rev.WRC-23) applies
47-47.2 GHz AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE	Amateur Amateur satellite	
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) 5.550C 5.552 MOBILE 5.553B[IMT52] 5.552A	IMT (47.2-48.2 GHz)	Resolution 244 (Rev.WRC-23) applies Resolution 122 (rev. WRC-19) applies for HAPS
47.5-47.9 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B[IMT52]	IMT (47.2-48.2 GHz)	Res.143 applies for HDFSS. Resolution 244 (Rev.WRC-23) applies

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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[IMT52] 5.552A	IMT (47.2-48.2 GHz)	Resolution 244 (Rev.WRC-23) applies Resolution 122 (rev. WRC-19) applies for HAPS
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		Resolution.143 (Rev.WRC-19) applies for HDFS.
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 5.149 5.340 5.555		In making assignments to stations in the frequency band 48.94-49.04 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
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 5.554A 5.555B MOBILE		Res Resolution 143 (Rev.WRC-19) applies for HDFS.
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)	Fixed Links	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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 FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556		Res.75 applies for HDFS.
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) 5.340 5.556	**52.6-54.25 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	Passive sensing (53.6 – 59.3 GHz)	
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)	Passive sensing (53.6 – 59.3 GHz)	
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	Passive sensing (53.6 – 59.3 GHz)	Res.75 applies for HDFS.

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Passive sensing (53.6 – 59.3 GHz)	Res.75 applies for HDFS.
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	Passive sensing (53.6 – 59.3 GHz) Fixed Links Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN (57-66 GHz) SRD Applications (57 – 64 GHz)	Res.75 applies for HDFS. Report ITU-R M.2227-X and Rec. ITU-R M.2003-X, EN 302 567 and EN305 550 ATU-R Recommendation 005-X applies in the range (57 – 66 GHz)
58.2-59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	**58.2-59 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN Passive sensing (53.6 – 59.3 GHz)	Res.75 applies for HDFS. EN 302567 applies for WiGig ATU-R Recommendation 005-0 applies in the range (57 – 66 GHz)
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)	Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN Passive sensing (53.6 – 59.3 GHz)	EN 302567 applies for WiGig ATU-R Recommendation 005-0 applies in the range (57 – 66 GHz)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	SRD applications (61-61.5 GHz): Reservoir Level Probing Radar (RLPR) Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN	ISM band (61-61.5 GHz) Center frequency 61.25 GHz Rec. ITU-R SM.1896-X, Report ITU-R SM.2153-X EN 302567 applies for WiGig ATU-R Recommendation 005-0 applies in the range (57 – 66 GHz)
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	Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN	Res.75 applies for HDFS. EN 302567 applies for WiGig ATU-R Recommendation 005-0 applies in the range (57 – 66 GHz)
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	Licence-exempt WAS/RLAN in the range 57 - 66 MHz e.g. Multiple GIGABIT wireless systems WAS/RLAN	Res.75 applies for HDFS. EN 302567 applies for WiGig ATU-R Recommendation 005-0 applies in the range (57 – 66 GHz)
66-71 GHz INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**66-71 GHz** INTER-SATELLITE MOBILE 5.553 5.558 5.559AA[IMT*] MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	IMT (66-71 GHz)	Resolution 241 (Rev.WRC-23) applies The use of the band 66-71 GHz by WAS (e.g. WiGig) is subject to coexistance study under Res 241

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
71-74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**71-74 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Fixed links (71-76 GHz)	Channelling plan in accordance with Rec. ITU-R F.2006 (Note: In this recommendation, this band is known as 70/80 GHz)
74-76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	**74-76 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	Fixed links (71-76 GHz)	Channelling plan in accordance with Rec. ITU-R F.2006 (Note: In this recommendation, this band is known as 70/80 GHz)
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	Radio Astronomy (Observations of continuum lines and celestial objects) SRD: - Road Transport and Traffic Telematics Radar (76 – 77 GHz) - Reservoir Level Probing Radar (RLPR)	ISM Band (76 – 77 GHz Rec. ITU-R M.1452, Report ITU-R .SM. 2153-X
77.5-78 GHz AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	**77.5-78 GHz** AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	Radio Astronomy (Observations of continuum lines and celestial objects)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observations of continuum lines and celestial objects)	
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	Radio Astronomy (Observations of continuum lines and celestial objects)	
81-84 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	**81-84 GHz** FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	Radio Astronomy (Observations of continuum lines and celestial objects) Fixed links (81-86 GHz)	Channelling plan in accordance with Rec. ITU-R F.2006 (Note: In this recommendation, this band is known as 70/80 GHz).
84-86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	**84-86 GHz** FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	Radio Astronomy (Observations of continuum lines and celestial objects) Fixed links (81-86 GHz)	Channelling plan in accordance with Rec. ITU-R F.2006 (Note: In this recommendation, this band is known as 70/80 GHz)

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observations of continuum lines and celestial objects)	
92-94 GHz FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**92-94 GHz** FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium)	
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	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium) Short Range Radar Systems Cloud Profile Radar	
94.1-95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**94.1-95 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation of diazenylium) Short Range Radar Systems	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur monoxide and methyl acetylene)	
100-102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**100-102 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur monoxide and methyl acetylene)	
102-105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	**102-105 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	Radio Astronomy (Observations of continuum lines and celestial objects and Observation of carbon monosulphide, sulphur monoxide and methyl acetylene)	
105-109.5 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**105-109.5 GHz** FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
111.8-114.25 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	**111.8-114.25 GHz** FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
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	Radio Astronomy (Observations of continuum lines and celestial objects and Spectral line observation and observations of carbon monoxide)	
116-119.98 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	**116-119.98 GHz** 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	SRD Applications	ISM Band (122 – 123 GHz) Centre frequency 122.5 Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	SRD Applications	ISM Band (122 – 123 GHz) Centre frequency 122.5 Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X
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	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
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	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**136-141 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**141-148.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
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	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide, and carbon monoxide)	
151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	
155.5-158.5 GHz FIXED MOBILE RADIO ASTRONOMY 5.149	**155.5-158.5 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149	Radio Astronomy (Observation of Formaldehyde, Deuterated Hydrogen cyanide and carbon monoxide)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
158.5-164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**158.5-164 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 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	Radio Astronomy (Continuum Observations)	
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		In making assignments to stations in the frequency band 168-174.5 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
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)		
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	Radio Astronomy (Observation of H_20)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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		
191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	**191.8-200 GHz** FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554		In making assignments to stations in the frequency band 191.8 – 231.5 GHz, administrations are urged to give consideration to Radio Astronomy applications as per RR n° 5.149
200-209 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	**200-209 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	Radio Astronomy (Observation of carbon monoxide)	
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	Radio Astronomy (Observation of carbon monoxide)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observation of carbon monoxide)	
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	Radio Astronomy (Observation of carbon monoxide)	
231.5-232 GHz FIXED MOBILE Radiolocation	**231.5-232 GHz** FIXED MOBILE Radiolocation		
232-235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	**232-235 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
235-238 GHz EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive) 5.563A 5.563B	**235-238 GHz** EARTH EXPLORATION-SATELLITE (passive) 5.563AA FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B		

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
238 - 239.2 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**238 - 239.2 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
239.2 - 240 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**239.2 - 240 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240-241 GHz EARTH EXPLORATION-SATELLITE (passive) RADIOLOCATION	**240-241 GHz** FIXED MOBILE RADIOLOCATION		
241 - 242.2 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**241 - 242.2 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149		
242.2 - 244.2 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**242.2 - 244.2 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	Radio Astronomy (Observation of spectral lines of C_2H, HCN Hydrogen cyanide, HCO+ and formallyl) SRD Applications	ISM Band (244 – 246 GHz) centre frequency 245 GHz Rec. ITU-R SM.1896-X Report ITU-R SM.2153-X

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
244.2 - 247.2 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**244.2 - 247.2 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	industrial, scientific and medical (ISM)	
247.2 - 248 GHz RADIO ASTRONOMY RADIOLOCATION Amateurs Amateur-satellite 5.149	**247.2 - 248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateurs Amateur-satellite 5.149		
248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	Radio astronomy (Observation of spectral lines of C_2H, HCN Hydrogen cyanide, HCO+ and formallyl)	
250-252 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	**250-252 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	Radio Astronomy (Observation of spectral lines of C_2H, HCN Hydrogen cyanide, HCO+ and formallyl)	

ITU Region 1 allocations and footnotes	Africa Common Allocations and footnotes	Typical Applications	Additional information
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	Radio Astronomy (Observation of spectral lines of C_2H, HCN Hydrogen cyanide, HCO+ and formallyl)	
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	Radio Astronomy (Observation of spectral lines of C_2H, HCN Hydrogen cyanide, HCO+ and formallyl)	
275-3 000 GHz (Not allocated) 5.564A 5.565	**275-3 000 GHz** (Not allocated) 5.564A 5.565		

9. BAND PLANS AND FREQUENCY MIGRATION/RE-FARMING

The high-level scope of AfriSAP does not allow detailed information regarding the various spectrum bands. Detailed information found in band plans such as channelling plans (frequency pairing and guard bands), maximum power levels, migration/re-farming plans, etc, are contained in separate documents as band plans, as appropriate. Where available, these could be annexed or referenced in AfriSAP, as appropriate. A good example is the bands plans related to the Digital Dividend bands as found in the **AU Guidelines on the Harmonized Use of the Digital Dividend bands in Africa.**

10. FUTURE EDITIONS

This plan will be amended from-time-to-time, and new editions produced as a result, on account of major developments in the spectrum sector that have a material impact on the substance of the plan such as the outcomes of the WRCs and other institutions such as the Radio Regulations Board (RRB) of the ITU, as well as, appropriate developments within the sub-regions/countries, among others. As a general rule, AfriSAP will therefore be amended preferably not later than twelve (12) months after the official publication of the RR following a WRC, and such other publications which impacts on the substance of the text of AfriSAP. Biennial (every 2 years) revision is desired.

11. RECOMMENDATIONS

ATU Member States and sub-regional groups are encouraged and invited, where practically possible, and as necessary and appropriate, to harmonize their frequency allocation plans with this plan taking into account their national/sub-regional needs.

All African countries are invited to review the RR footnotes in which they are named to ascertain the continued need of their countries' names in those footnotes as part of the preparation towards agenda item 8 of WRC-27 and beyond.

12. ANNEXES

The following additional information is contained as annexes to AfriSAP:

- Annex A: List of ITU Radio Regulation footnotes
- Annex B: Radio Regulations footnotes with reference to African countries
- Annex C: Satellite Planned Bands orbital slots relevant to African countries
- Annex D: Satellite Planned Bands relevant to African countries
- Annex E: Frequencies for Public Protection and Disaster Relief (PPDR), Distress/Emergency and Safety
- Annex F: Spectrum Bands Identified for IMT
- Annex G: List of WRC Resolutions, ITU-R Recommendations and ITU-R Reports referenced in the Table of Frequency Allocations

Annex A: List of ITU Radio Regulations footnotes referenced/mentioned in Column 1 and Column 2 of the Table of Frequency Allocations

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 frequency bands 14-19.95 kHz and 20.05-70 kHz and in **Region 1** also the frequency 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, Russian Federation, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan,** the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-23)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.79 In the maritime mobile service, the frequency bands 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy and may also be used for the NAVDAT system in accordance with the most recent

version of Recommendation ITU-R M.2010, subject to agreement between interested and affected administrations. NAVDAT transmitting stations are limited to coast stations. (WRC-19)

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

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

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

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.

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

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

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

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

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

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

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

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

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

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

5.98 *Alternative allocation*: in **Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Eritrea, Spain, Ethiopia, Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, Syrian Arab Republic, Türkiye, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan**, the frequency band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)

5.99 *Additional allocation:* in **Saudi Arabia**, **Austria**, **Egypt**, **Iraq**, **Libya**, **Uzbekistan**, **Slovakia**, **Romania**, **Slovenia**, **Chad**, **Togo**, the frequency band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-23)

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

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

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

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

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

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

5.110 The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are used for the automatic connection system (ACS), as described in the most recent version of **Rec. ITU-R M.541**. (WRC-23)

5.111 The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 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 **Liberia**, **Sri Lanka**, **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-23)

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

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

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

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

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

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

5.132 The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz,19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see **Appendix 15** and **Appendix 17**). (WRC-23)

5. 132A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (**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)

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

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

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

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

5.138 The following bands:

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

122-123 GHz (centre frequency 122.5 GHz), and
244-246 GHz (centre frequency 245 GHz)

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

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

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

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

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

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

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

5.143C *Additional allocation*: after 29 March 2009 in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), 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)

5.144 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,
25 550-25 670 kHz,
37.5-38.25 MHz,
73-74.6 MHz in Regions 1 and 3,
150.05-153 MHz in Region 1,
322-328.6 MHz,
406.1-410 MHz,
608-614 MHz in Regions 1 and 3,
1 330-1 400 MHz,
1 610.6-1 613.8 MHz,
1 660-1 670 MHz,
1 718.8-1 722.2 MHz,
2 655-2 690 MHz,
3 260-3 267 MHz,
3 332-3 339 MHz,
3 345.8-3 352.5 MHz,
4 825-4 835 MHz,
4 950-4 990 MHz,
4 990-5 000 MHz,
6 650-6 675.2 MHz,
10.6-10.68 GHz,
14.47-14.5 GHz,
22.01-22.21 GHz,
22.21-22.5 GHz,
22.81-22.86 GHz,
23.07-23.12 GHz,
31.2-31.3 GHz,
31.5-31.8 GHz in Regions 1 and 3,
36.43-36.5 GHz,
42.5-43.5 GHz,
48.94-49.04 GHz,
76-86 GHz,
92-94 GHz,
94.1-100 GHz,
102-109.5 GHz,
111.8-114.25 GHz,
128.33-128.59 GHz,
129.23-129.49 GHz,
130-134 GHz,
136-148.5 GHz,
151.5-158.5 GHz,
168.59-168.93 GHz,
171.11-171.45 GHz,
172.31-172.65 GHz,
173.52-173.85 GHz,
195.75-196.15 GHz,
209-226 GHz,
241-250 GHz,
252-275 GHz

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

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

5.150 The following bands:

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**, **Russian Federation**, **Georgia**, **Moldova**, **Uzbekistan**, **Kyrgyzstan**, **Slovakia**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis. (WRC-23)

5.155A In **Armenia**, **Azerbaijan**, **Belarus**, **Russian Federation**, **Georgia**, **Moldova**, **Uzbekistan**, **Kyrgyzstan**, **Slovakia**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the use of the frequency band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-23)

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)

5.159A The use of the frequency band 40-50 MHz by the Earth exploration-satellite service (active) shall be in accordance with the geographical area restrictions and the operational and technical conditions defined in **Res. 677 (WRC-23)**. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-23)

5.160 *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, Türkiye, Kyrgyzstan, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland and Ukraine, the frequency band 42-42.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-23)

5.162A *Additional allocation:* in **Germany**, **Australia**, **Austria**, **Belgium**, **Bosnia and Herzegovina**, **China**, **Vatican**, **Korea (Rep. of)**, **Denmark**, **Spain**, **Estonia**, **Russian Federation**, **Finland**, **France**, **Indonesia**, **Ireland**, **Iceland**, **Italy**, **Japan**, **Latvia**, **Liechtenstein**, **Lithuania**, **Luxembourg**, **North Macedonia**, **Monaco**, **Montenegro**, **Norway**, **Netherlands**, **Poland**, **Portugal**, **Dem. People's Rep. of Korea**, **Czech Rep.**, **United Kingdom**, **Serbia**, **Slovenia**, **Sweden**, **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 **Res. 217 (Rev.WRC-23)**. (WRC-23)

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

5.164 *Additional allocation:* in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Eswatini, Finland, France, Gabon, Greece, Hungary, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Türkiye, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Chad, Togo and Tunisia, 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-23)

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

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

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

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

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

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

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

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

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

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

5.175 *Alternative allocation:* in **Armenia**, **Belarus**, **Russian Federation**, **Kazakhstan**, **Moldova**, **Uzbekistan**, **Kyrgyzstan**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the frequency bands 68-73 MHz and 76-87.5 MHz are

[*]Pursuant to Resolution 99 (Rev. Dubai, 2018) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

allocated to the broadcasting service on a primary basis. In **Latvia**, **Lithuania**, the frequency bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. In **Mongolia**, the frequency band 76-87.5 MHz is allocated to the broadcasting service on a primary basis; the stations of the broadcasting service shall not cause harmful interference to, or claim protection from, existing or planned fixed and mobile stations in the neighbouring countries. The services to which these frequency 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-23)

5.177 *Additional allocation:* in **Armenia**, **Belarus**, **Russian Federation**, **Kazakhstan**, **Uzbekistan**, **Kyrgyzstan**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the frequency band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-23)

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 Samoa, the band 75.4-87 MHz is also allocated to the broadcasting service on a primary basis. (WRC-23)

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

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

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

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

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

5.197A *Additional allocation:* the frequency band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with **Res. 413 (Rev.WRC-23)**.

The use of the frequency band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. (WRC-23)

5.**198A** The use of the frequency band 117.975-137 MHz by the aeronautical mobile-satellite (R) service is subject to coordination under No. **9.11A**. No. **9.16** does not apply. Such use shall be limited to non-geostationary-satellite systems operated in accordance with international aeronautical standards. Resolution **406 (WRC-23)** applies. (WRC-23)

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

5.200 In the frequency band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in **Article 31** for distress and safety purposes with stations of the aeronautical mobile service and the aeronautical mobile-satellite service. (WRC-23)

5.201 *Additional allocation:* in **Saudi Arabia**, **Armenia**, **Azerbaijan**, **Bahrain**, **Egypt**, **Estonia**, **Russian Federation**, **Georgia**, **Hungary**, **Iran (Islamic Republic of)**, **Iraq**, **Japan**, **Kazakhstan**, **Mali**, **Mongolia**, **Mozambique**, **Uzbekistan**, **Papua New Guinea**, **Poland**, **Qatar**, **Kyrgyzstan**, **Romania**, **Senegal**, **Somalia**, **Tajikistan**, **Turkmenistan**, the frequency band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-23)

5.202 *Additional allocation:* in **Saudi Arabia**, **Armenia**, **Azerbaijan**, **Bahrain**, **United Arab Emirates**, **Russian Federation**, **Georgia**, **Iran (Islamic Republic of)**, **Jordan**, **Mali**, **Oman**, **Uzbekistan**, **Poland**, **Syrian Arab Republic**, **Kyrgyzstan**, **Romania**, **Senegal**, **Tajikistan**, **Turkmenistan**, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-23)

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

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

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

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

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

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

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

5.208B* In the 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**, **United Kingdom**, the frequency 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-23)

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, Türkiye, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania and Tunisia, the frequency band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-23).

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

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

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

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

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

5.218A The frequency band 148-149.9 MHz in the space operation service (Earth-to-space) may be used by non-geostationary-satellite systems with short-duration missions. Non-geostationary-satellite systems in the space operation service used for a short-duration mission in accordance with Resolution **32** (WRC-19) of the Radio Regulations are not subject to agreement under No. **9.21**. At the stage of coordination, the provisions of Nos. **9.17** and **9.18** also apply. In the frequency band 148-149.9 MHz, non-geostationary-satellite systems with short-duration missions shall not cause unacceptable interference to, or claim protection from, existing primary services within this frequency band, or impose additional constraints on the space operation and mobile-satellite services. In addition, earth stations in non-geostationary-satellite systems in the space operation service with short-duration missions in the frequency band 148-149.9 MHz shall ensure that the power flux-density does not exceed −149 dB(W/($m^2 \cdot$ 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**, **United Arab Emirates**, **Eritrea**, **Spain**, **Estonia**, **Eswatini**, **Ethiopia**, **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**, **Netherlands**, **Philippines**, **Poland**, **Portugal**, **Qatar**, **Syrian Arab Republic**, **Türkiye**, **Kyrgyzstan**, **Dem. People's Rep. of Korea**, **Slovakia**, **Romania**, **United Kingdom**, **Senegal**, **Serbia**, **Sierra Leone**, **Singapore**, **Slovenia**, **Somalia**, **Sudan**, **Sri Lanka**, **South Africa**, **Sweden**, **Switzerland**, **Tanzania**, **Chad**, **Togo**, **Tonga**, **Trinidad and Tobago**, **Tunisia**, **Ukraine**, **Viet Nam**, **Yemen**, **Zambia**, **Zimbabwe**. (WRC-23)

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

5.228 The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobile satellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency bands by systems operating in the maritime mobile service for communications shall not exceed 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-geostationary-satellite systems operating in accordance with Appendix **18**. (WRC-19)

5.228AC The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (space-to-Earth) is limited to non-geostationary-satellite systems operating in accordance with Appendix **18**. Such use is subject to agreement obtained under No. **9.21** with respect to the terrestrial services in Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, the Russian

Federation, the Syrian Arab Republic, the Dem. People's Rep. of Korea, South Africa and Viet Nam. (WRC 19)

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

5.228C The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS), including AIS search and rescue transmitters (AIS-SART) and satellite emergency position indicating radio beacons with AIS (EPIRB-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, AIS-SART and EPIRB-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-23).

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)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, 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.

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

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

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

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

5.264B Non-geostationary-satellite systems in the meteorological-satellite service and the Earth exploration-satellite service for which complete notification information has been received by the Radiocommunication Bureau no later than 28 April 2007 are exempt from provisions of No. **5.264A** and may continue to operate in the frequency band 401.898-402.522 MHz on a primary basis without exceeding a maximum e.i.r.p. level of 12 dBW. (WRC-23)

5.264 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.

5.265 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 $0^o \leq \delta \leq 5^o$, -153+ 0.077 (d – 5) dB(W/m^2) for $5^o \leq \delta \leq 70^o$ and –148 dB(W/m^2) for $70^o \leq \delta \leq 90^o$, 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**, **Brazil**, **United States**, **India**, **Japan**, **United Kingdom**, the allocation of the frequency bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**). (WRC-23)

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

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

5.274 *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, Türkiye, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Switzerland, Thailand, Togo 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-23)

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

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

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

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

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

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

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

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

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

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

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

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

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

5.286E *Additional allocation:* in Cabo 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-23)

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

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

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

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

5.291A *Additional allocation:* in **Germany**, **Austria**, **Denmark**, **Estonia**, **Liechtenstein**, **Serbia**, **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 **Res. 217 (Rev.WRC-23)**. (WRC-23)

5.293 *Different category of service:* in Canada, Chile, Cuba, the United States, Guyana 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-23)

5.294 *Additional allocation:* in **Saudi Arabia**, **Cameroon**, **Côte d'Ivoire**, **Egypt**, **Ethiopia**, **Israel**, **Libya**, **Palestine***[6], **Syrian Arab Republic**, **Chad**, **Yemen**, the frequency band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-23)

5.**295A** *Additional allocation:* in **Albania**, **Germany**, **Andorra**, **Austria**, **Belgium**, **Bosnia and Herzegovina**, **Bulgaria**, **Cyprus**, **Vatican**, **Croatia**, **Denmark**, **Estonia**, **Finland**, **France**, **Georgia**, **Greece**, **Hungary**, **Ireland**, **Iceland**, **Latvia**, **Liechtenstein**, **Lithuania**, **Luxembourg**, **North Macedonia**, **Malta**, **Moldova**, **Monaco**, **Montenegro**, **Norway**, **Uzbekistan**, **Netherlands**, **Poland**, **Portugal**, **Türkiye**, **Slovakia**, **Czech Rep.**, **Romania**, **United Kingdom**, **San Marino**, **Serbia**, **Slovenia**, **Sweden**, **Switzerland**, **Ukraine** the frequency band 470- 694 MHz is allocated to the mobile, except aeronautical mobile, service on a secondary basis, subject to agreement obtained under No. **9.21**. For the protection of the broadcasting service, stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the **GE06 Agreement** with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the **GE06 Agreement**. These limits may be exceeded on the territory of any country whose administration has so agreed. This allocation shall in no way adversely affect the broadcast development or undermine new entries of the broadcast service to the **GE06 Agreement**. (WRC- 23)

5.296 *Additional allocation:* in **Albania**, **Algeria**, **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**, **Gambia**, **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**, **Palestine***, **Netherlands**, **Poland**, **Portugal**, **Qatar**, **Syrian Arab Republic**, **Türkiye**, **Slovakia**, **Czech Rep.**, **Romania**, **United Kingdom**, **Rwanda**, **San Marino**, **Senegal**, **Serbia**, **Sudan**, **South Africa**, **Sweden**, **Switzerland**, **Tanzania**, **Chad**, **Togo**, **Tunisia**, **Ukraine**, **Zambia**, **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-23)

5.300 *Additional allocation:* in **Saudi Arabia**, **Cameroon**, **Egypt**, **United Arab Emirates**, **Iraq**, **Israel**, **Jordan**, **Libya**, **Oman**, **Palestine***, **Qatar**, **Syrian Arab Republic**, **Sudan**, the frequency band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-23)

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

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

5.307A *Additional allocation:* in **Saudi Arabia**, **Bahrain**, **Egypt**, **United Arab Emirates**, **Iraq**, **Jordan**, **Kuwait**, **Oman**, **Palestine***, **Qatar**, **Syrian Arab Republic**, the frequency band 614-694 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis and identified for International Mobile Telecommunications (IMT) – see **Res. 224 (Rev.WRC-23)** subject to the agreement obtained under No. **9.21**. Stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the **GE06 Agreement** with regard to allowance for multiple interference, Table A.1.10 and the

*Pursuant to **Resolution 99 (Rev. Dubai, 2018)** of the Plenipotentiary Conference and taking into account the **Israeli-Palestinian Interim Agreement of 28 September 1995**.

methodology given in the **GE06 Agreement**. Stations in the mobile service of the countries listed in this footnote shall not cause harmful interference to, or claim protection from the existing and future broadcasting stations of the neighbouring countries operating in accordance with the **GE06 Agreement**. 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 and shall in no way adversely affect the development of the existing and future broadcasting service in accordance with the **GE06 Agreement**. For countries party to the **GE06 Agreement**, the use of stations in the mobile service is also subject to the successful application of the procedures of that Agreement. This allocation does not establish priority in the Radio Regulations and shall allow the implementation and development of the broadcasting service in accordance with the **GE06 Agreement**. The countries listed in this footnote and located in the African Broadcasting Area should ensure protection of the radio astronomy service within the frequency band 606-614 MHz, as allocated in No. **5.304**, consistent with the most recent version of **Rec. ITU-R RA.769**. The countries listed in this footnote, which are neighbouring to the countries listed in No. **5.312**, should ensure the protection of the aeronautical radionavigation service in the frequency band 645-862 MHz. (WRC-23)

5.307B *Additional allocation:* in **Gambia**, **Mauritania**, **Namibia**, **Nigeria**, **Senegal**, **Somalia**, **Tanzania**, **Chad**, the frequency band 614-694 MHz is allocated to the mobile service on a secondary basis. For the protection of the broadcasting service, stations in the mobile service shall not create a field strength for more than 1% of the time at the highest of the clutter height or 10 m above ground level at the border of the territory of any other administration that exceeds the field strength value as calculated using § 4.1.3.2 of Annex 2 to the **GE06 Agreement** with regard to allowance for multiple interference, Table A.1.10 and the methodology given in the **GE06 Agreement**. This allocation shall in no way adversely affect the broadcast development or undermine new entries of the broadcast service to the **GE06 Agreement**. Additional measures shall be used by administrations implementing stations in the mobile services to protect stations in the broadcasting service of neighbouring administrations such as a distance limitation from the border of a neighbouring country. (WRC-23)

5.312 *Additional allocation*: in **Armenia**, **Azerbaijan**, **Belarus**, **Russian Federation**, **Georgia**, **Kazakhstan**, **Uzbekistan**, **Kyrgyzstan**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the frequency band 645-862 MHz, and in **Bulgaria** the frequency bands 726-753 MHz, 778-811 MHz and 822-852 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-23)

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 **Res. 760 (Rev.WRC-23)**. See also **Res. 224 (Rev.WRC-23)**. (WRC-23)

5.312B The frequency band 698-960 MHz, or portions thereof, in **Region 2**, and the frequency band 694-960 MHz, or portions thereof, in **Region 1**, are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. **Res. 213 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply, see resolves 2 of **Res. 213 (WRC-23)**. Such use of HIBS in the frequency bands 694 728 MHz, 805.3-806.9 MHz and 830-835 MHz is limited to reception by HIBS. (WRC 23)

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)

5.314A The frequency band 698-960 MHz, or portions thereof, in **Australia**, **Maldives**, **Micronesia**, **Papua New Guinea**, **Tonga**, **Vanuatu**, the frequency bands 703-733 MHz, 758-788 MHz, 890-915 MHz and 935-960 MHz, or portions thereof, in **China**, **Korea (Rep. of)**, **India**, **Indonesia**, **Japan**, **Malaysia**,

Philippines, **Thailand** are identified for use by high-altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. **Res. 213 (WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply, see resolves 2 of **Res. 213 (WRC-23)**. Such use of HIBS in the frequency bands 698-728 MHz and 830-835 MHz are limited to reception by HIBS. (WRC 23)

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. **Res. 224 (Rev.WRC-23)** and **Res. 749 (Rev.WRC-23)** shall apply, as appropriate. (WRC-23)

5.317A The parts of the frequency band 698-960 MHz in **Region 2** and the frequency bands 694-790 MHz in **Region 1** and 790-960 MHz in **Regions 1 and 3** which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see **Res. 224 (Rev.WRC-23)**, **Res. 749 (Rev.WRC-23)** and **Res. 760 (Rev.WRC-23)**, where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-23)

5.319 *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.

5.322 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**, **Djibouti**, **Egypt**, **Spain**, **Lesotho**, **Libya**, **Malawi**, **Morocco**, **Namibia**, **Nigeria**, **South Africa**, **Tanzania**, **Zambia**, **Zimbabwe**, subject to agreement obtained under No. **9.21**. (WRC-23)

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

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

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

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

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

accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution **425 (Rev.WRC-19)** shall apply. (WRC-19)

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

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

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

5.330 *Additional allocation:* in **Angola**, **Saudi Arabia**, **Bahrain**, **Bangladesh**, **Cameroon**, **China**, **Djibouti**, **Egypt**, **United Arab Emirates**, **Eritrea**, **Ethiopia**, **Guyana**, **India**, **Indonesia**, **Iran (Islamic Republic of)**, **Iraq**, **Israel**, **Japan**, **Jordan**, **Kuwait**, **Nepal (Republic of)**, **Oman**, **Pakistan**, **Palestine***, **Philippines**, **Qatar**, **Syrian Arab Republic**, **Somalia**, **Sudan**, **South Sudan**, **Chad**, **Togo**, **Yemen**, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23

5.331 *Additional allocation:* in **Algeria**, **Germany**, **Saudi Arabia**, **Australia**, **Austria**, **Bahrain**, **Belarus**, **Belgium**, **Benin**, **Bosnia and Herzegovina**, **Brazil**, **Burkina Faso**, **Burundi**, **Cameroon**, **China**, **Korea (Rep. of)**, **Croatia**, **Denmark**, **Djibouti**, **Egypt**, **United Arab Emirates**, **Estonia**, **Russian Federation**, **Finland**, **France**, **Ghana**, **Greece**, **Guinea**, **Equatorial Guinea**, **Hungary**, **India**, **Indonesia**, **Iran (Islamic Republic of)**, **Iraq**, **Ireland**, **Israel**, **Jordan**, **Kenya**, **Kuwait**, **Lesotho**, **Latvia**, **Lebanon**, **Liechtenstein**, **Lithuania**, **Luxembourg**, **North Macedonia**, **Madagascar**, **Mali**, **Mauritania**, **Montenegro**, **Nigeria**, **Norway**, **Oman**, **Pakistan**, **Palestine***, **Netherlands**, **Poland**, **Portugal**, **Qatar**, **Syrian Arab Republic**, **Türkiye**, **Dem. People's Rep. of Korea**, **Slovakia**, **United Kingdom**, **Serbia**, **Slovenia**, **Somalia**, **Sudan**, **South Sudan**, **Sri Lanka**, **South Africa**, **Sweden**, **Switzerland**, **Thailand**, **Togo**, **Venezuela**, **Viet Nam**, the frequency band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In **Canada**, **United States**, the frequency band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-23)

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

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

amateur or amateur-satellite services, shall take all necessary steps to rapidly eliminate such interference. (WRC 23)

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

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

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

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

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

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

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

5.339A 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,	

[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)

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

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

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

5.346 In **Algeria**, **Angola**, **Saudi Arabia**, **Bahrain**, **Benin**, **Botswana**, **Burkina Faso**, **Burundi**, **Cameroon**, **Central African Rep.**, **Congo (Rep. of the)**, **Côte d'Ivoire**, **Djibouti**, **Egypt**, **United Arab Emirates**, **Eswatini**, **Gabon**, **Gambia**, **Ghana**, **Guinea**, **Iraq**, **Jordan**, **Kenya**, **Kuwait**, **Lesotho**, **Lebanon**, **Liberia**, **Madagascar**, **Malawi**, **Mali**, **Morocco**, **Mauritius**, **Mauritania**, **Mozambique**, **Namibia**, **Niger**, **Nigeria**, **Oman**, **Uganda**, **Palestine***, **Qatar**, **Dem. Rep. of the Congo**, **Rwanda**, **Senegal**, **Seychelles**, **Somalia**, **Sudan**, **South Sudan**, **South Africa**, **Tanzania**, **Chad**, **Togo**, **Tunisia**, **Zambia**, **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 **Res. 223 (Rev.WRC-23)**. 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 **Res. 761 (Rev.WRC-19)**. (WRC-23)

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)

5.349 *Different category of service*: in **Saudi Arabia**, **Azerbaijan**, **Bahrain**, **Cameroon**, **Djibouti**, **Egypt**, **Iran (Islamic Republic of)**, **Iraq**, **Israel**, **Kuwait**, **Lebanon**, **North Macedonia**, **Morocco**, **Qatar**, **Syrian Arab Republic**, **Kyrgyzstan**, **Turkmenistan**, **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-23)

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 **Res. 212 (Rev.WRC-23)** and **Res. 225 (Rev.WRC-23)**. (WRC-23)

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

5.353A In applying the procedures of Section II of **Article 9** to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of **Res. 222 (Rev.WRC-23)** shall apply.) (WRC-23)

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

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

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

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

5.357A In applying the procedures of Section II of **Article 9** to the mobile-satellite service in the frequency bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in **Article 44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in **Article 44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in **Article 44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of **Res. 222 (Rev.WRC-23)** shall apply.) (WRC-23)

5.359 *Additional allocation:* in **Germany**, **Saudi Arabia**, **Armenia**, **Azerbaijan**, **Belarus**, **Cameroon**, **Russian Federation**, **Georgia**, **Guinea**, **Guinea-Bissau**, **Jordan**, **Kazakhstan**, **Kuwait**, **Lithuania**, **Mauritania**, **Uganda**, **Uzbekistan**, **Pakistan**, **Poland**, **Syrian Arab Republic**, **Kyrgyzstan**, **Dem. People's Rep. of Korea**, **Romania**, **Tajikistan**, **Tunisia**, **Turkmenistan**, 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-23)

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

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

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

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

5.367 *Additional allocation*: The frequency 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 bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see resolves 5 of **Res. 365 (WRC-23)**) and 1 621.35-1 626.5 MHz with respect to the maritime mobile-satellite service when used for GMDSS. In applying the procedure of Section II of **Article 9**, the provisions of No. **4.10** do not apply for the frequency bands 1 614.4225-1 618.725 MHz or 1 616.3-1 620.38 MHz (Earth-to-space) (see resolves 5 of **Res. 365 (WRC-23)**) and 2 483.59-2 499.91 MHz (space-to-Earth) for the maritime mobile-satellite service when used for the GMDSS with satellite networks or systems for which complete coordination information has been received by the Radiocommunication Bureau before 20 November 2023. **Res. 365 (WRC-23)** applies. (WRC-23)

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

5.371 *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 mobile-satellite services (No. 29.13 applies). The equivalent power flux-density (epfd) produced in the frequency band 1 610.6-1 613.8 MHz by all space stations of a non-geostationary-satellite system in the mobile-satellite service (space-to-Earth) operating in frequency band 1 613.8-1 626.5 MHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, using the methodology given in Recommendation ITU-R M.1583-1, and the radio astronomy antenna pattern described in Recommendation ITU-R RA.1631-0. (WRC-19)

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

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

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

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

5.375 The use of the band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress, urgency and safety communications (see **Article 31**). (WRC-23)

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

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

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

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

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

5.379C In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service

operating in this band shall not exceed –181 dB(W/m^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, **Res. 744 (Rev.WRC-23)** shall apply. (WRC-23)

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, and in the Dem. People's Rep. of Korea the frequency band 1 690-1 700 MHz is also allocated to the fixed service on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-23)

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**). (WRC-23)

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**, **Kyrgyzstan**, **Romania**, **Tajikistan**, **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-23)

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 **Res. 212 (Rev.WRC-23)** (See also **Res. 223 (Rev.WRC-23)**). (WRC-23)

5.388A The frequency bands 1 710-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in **Regions 1 and 3** and the frequency bands 1 710-1 980 MHz and 2 110-2 160 MHz in **Region 2** are identified for the use by high altitude platform stations as International Mobile Telecommunications (IMT) base stations (HIBS). This identification does not preclude the use of these frequency bands by any application of

the services to which they are allocated and does not establish priority in the Radio Regulations. **Res. 221 (Rev.WRC-23)** shall apply. HIBS shall not claim protection from existing primary services. No. **5.43A** does not apply. Such use of HIBS in the frequency bands 1 710-1 785 MHz in **Regions 1 and 2**, and 1 710-1 815 MHz in **Region 3** is limited to reception by HIBS, and in the frequency band 2 110-2 170 MHz is limited to transmission from HIBS. (WRC 23)

5.389A The use of the 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 **Res. 716 (Rev.WRC-23)**. (WRC-23)

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

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

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

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

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

5.394 In the United States, the use of the frequency band 2 360-2 395 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the frequency band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-23)

5.395 In France and Türkiye, 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-23)

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

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

5.399 Except for cases referred to in No. **5.401**, stations of the radiodetermination-satellite service operating in the frequency band 2 483.5-2 500 MHz for which notification information is received by the Bureau after 17 February 2012, and the service area of which includes Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, shall not

cause harmful interference to, and shall not claim protection from stations of the radiolocation service operating in these countries in accordance with No. **5.398A**. (WRC-12)

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

5.402 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.

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

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

5.412 *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.

5.416 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)

5.418B 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 The use of the frequency band 2 670-2 690 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-23)

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

5.429A *Additional allocation*: in **Angola**, **Botswana**, **Burkina Faso**, **Burundi**, **Cabo Verde**, **Central African Rep.**, **Comoros**, **Djibouti**, **Eritrea**, **Eswatini**, **Ethiopia**, **Gambia**, **Ghana**, **Guinea**, **Guinea-Bissau**, **Equatorial Guinea**, **Lesotho**, **Liberia**, **Madagascar**, **Malawi**, **Mauritius**, **Mauritania**, **Mozambique**, **Namibia**, **Niger**, **Nigeria**, **Palestine***, **Dem. Rep. of the Congo**, **Rwanda**, **Sao Tome and Principe**, **Senegal**, **Seychelles**, **Sierra Leone**, **Somalia**, **South Sudan**, **South Africa**, **Tanzania**, **Chad**, **Togo**, **Zambia**, **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-23)

5.429B In the following countries of **Region 1**: **Angola**, **Benin**, **Botswana**, **Burkina Faso**, **Burundi**, **Cabo Verde**, **Cameroon**, **Central African Rep.**, **Comoros**, **Congo (Rep. of the)**, **Côte d'Ivoire**, **Djibouti**, **Egypt**, **Eritrea**, **Eswatini**, **Ethiopia**, **Gambia**, **Ghana**, **Guinea**, **Guinea-Bissau**, **Equatorial Guinea**, **Kenya**, **Lesotho**, **Liberia**, **Madagascar**, **Malawi**, **Mauritius**, **Mauritania**, **Mongolia**, **Mozambique**, **Namibia**, **Niger**, **Nigeria**, **Uganda**, **Dem. Rep. of the Congo**, **Rwanda**, **Sao Tome and Principe**, **Senegal**, **Seychelles**, **Sierra Leone**, **Somalia**, **Sudan**, **South Sudan**, **Tanzania**, **Chad**, **Togo**, **Zambia**, **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 **Res. 223**

(Rev.WRC-23). The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, 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-23)

5.429G Stations in the mobile, except aeronautical mobile, service operating in the frequency band 3 300-3 400 MHz in **Region 2** shall not cause harmful interference to, or claim protection from, systems operating in the radiolocation service. (WRC 23)

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.**433B** In **Angola**, **Botswana**, **Guinea**, **Lesotho**, **Malawi**, **South Sudan**, the frequency band 3 600-3 700 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. **5.434A** shall apply. (WRC 23)

5.434A The use of the frequency band 3 600-3 800 MHz by the mobile, except aeronautical mobile, service on a primary basis in **Region 1** is subject to agreement obtained under No. **9.21** if the power flux-density (pfd) limit below is exceeded. The provisions of Nos. **9.17** and **9.18** shall also apply in the coordination phase. Before an administration in **Region 1** brings into use a station in the mobile service in the frequency band 3 600-3 800 MHz, for the protection of stations in the fixed and fixed-satellite services, it shall ensure that the pfd produced at 3 m above ground does not exceed −154.5 dB(W/(m2 . 4 kHz)) for more than 20% of the time at the border of the territory of any other administration. Stations in the mobile service operating in the frequency band 3 600-3 800 MHz shall not claim more protection from space stations than that provided in **Table 21-4 of Article 21** of the Radio Regulations. (WRC 23)

5.434B In **Algeria**, **Saudi Arabia**, **Azerbaijan**, **Bahrain**, **Belarus**, **Benin**, **Burkina Faso**, **Burundi**, **Cameroon**, **Central African Rep.**, **Comoros**, **Congo (Rep. of the)**, **Côte d'Ivoire**, **Djibouti**, **Egypt**, **United Arab Emirates**, **Eswatini**, **Gabon**, **Gambia**, **Ghana**, **Guinea**, **Iraq**, **Jordan**, **Kazakhstan**, **Kenya**, **Kuwait**, **Lebanon**, **Liberia**, **Libya**, **Madagascar**, **Mali**, **Morocco**, **Mauritius**, **Mauritania**, **Mozambique**, **Namibia**, **Niger**, **Nigeria**, **Oman**, **Uganda**, **Uzbekistan**, **Palestine***, **Qatar**, **Syrian Arab Republic**, **Dem. Rep. of the Congo**, **Rwanda**, **Sao Tome and Principe**, **Senegal**, **Sierra Leone**, **Somalia**, **Sudan**, **South Sudan**, **Tanzania**, **Chad**, **Togo**, **Tunisia**, **Yemen**, **Zambia**, **Zimbabwe**, the frequency band 3 600-3 800

MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of the frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The conditions of No. **5.434A** shall apply. (WRC-23)

5.435A Different category of service: In **Angola**, **Botswana**, **Guinea**, **Lesotho**, **Malawi**, **South Sudan**, the frequency band 3 700-3 800 MHz is allocated to the mobile service on a secondary basis. (WRC 23)

5.435B In **Bahamas**, **Belize**, **Brazil**, **Canada**, **Costa Rica**, **United States**, **Greenland**, **Guatemala**, **Paraguay**, **Peru**, **Trinidad and Tobago**, **Uruguay**, **the French overseas departments and communities in Region 2** , **the overseas countries and territories within the Kingdom of the Netherlands in Region 2** the frequency band 3 700-3 800 MHz is identified for use by any of 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. Administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to ensure the protection of the fixed-satellite service (space-to-Earth). (WRC 23)

5.436 Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **424 (Rev.WRC-23)**. (WRC-23)

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

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

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

5.440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 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**, **Argentina**, **Armenia**, **Azerbaijan**, **Benin**, **Botswana**, **Brazil**, **Burkina Faso**, **Burundi**, **Cabo Verde**, **Cambodia**, **Cameroon**, **Chile**, **China**, **Colombia**, **Congo (Rep. of the)**, **Côte d'Ivoire**, **Djibouti**, **Eswatini**, **Russian Federation**, **Gabon**, **Ghana**, **Guinea**, **Iran (Islamic Republic of)**, **Iraq**, **Kazakhstan**, **Lao P.D.R.**, **Lesotho**, **Liberia**, **Madagascar**, **Malawi**, **Mali**, **Mongolia**, **Namibia**, **Niger**, **Uganda**, **Uzbekistan**, **Dem. Rep. of the Congo**, **Kyrgyzstan**, **Dem. People's Rep. of Korea**, **South Sudan**, **South Africa**, **Chad**, **Togo**, **Viet Nam**, **Zambia**, **Zimbabwe**, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density produced by this station does not exceed −155 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 criterion is subject to review at WRC-23. See **Res. 223 (Rev.WRC-23)**. (WRC-23).

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

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

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

5.443B In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed -124.5 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 radiodetermination satellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power fluxdensity at the Earth's surface shall in no case exceed -159 dB(W/m^2) in any 4 kHz band for all angles of arrival. (WRC-15)

5.446A The use of the frequency bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with **Res. 229 (Rev.WRC-23)**. (WRC-23)

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**, **Syrian Arab Republic**, **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 **Res. 229 (Rev.WRC-23)** do not apply. (WRC-23)

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 **Res. 229 (Rev.WRC-23)**. (WRC-23)

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 **Res. 229 (Rev.WRC-23)**. (WRC-23)

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

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

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

5.453 *Additional allocation:* in **Saudi Arabia**, **Bahrain**, **Bangladesh**, **Brunei Darussalam**, **Cameroon**, **China**, **Congo (Rep. of the)**, **Korea (Rep. of)**, **Côte d'Ivoire**, **Djibouti**, **Egypt**, **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**, **Philippines**, **Qatar**, **Syrian Arab Republic**, **Dem. People's Rep. of Korea**, **Singapore**, **Sri Lanka**, **Tanzania**, **Chad**, **Thailand**, **Togo**, **Viet Nam**, **Yemen**, the frequency band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of **Res. 229 (Rev.WRC-23)** do not apply. In addition, in **Afghanistan**, **Angola**, **Benin**, **Bhutan**, **Botswana**, **Burkina Faso**, **Burundi**, **Fiji**, **Ghana**, **Kiribati**, **Lesotho**, **Malawi**, **Maldives**, **Mauritius**, **Micronesia**, **Mongolia**, **Mozambique**, **Myanmar**, **Namibia**, **Nauru**, **New Zealand**, **Papua New Guinea**, **Dem. Rep. of the Congo**, **Rwanda**, **Solomon Islands**, **South Sudan**, **South Africa**, **Tonga**, **Vanuatu**, **Zambia**, **Zimbabwe**, the frequency band 5 725-5 850 MHz is allocated to the fixed service on a primary basis, and stations operating in the fixed service shall not cause harmful interference to and shall not claim protection from other primary services in the frequency band. (WRC-23)

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

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

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

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

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

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

5.457D In **Cambodia**, **Lao P.D.R.**, **Maldives**, the frequency band 6 425-7 025 MHz is identified for the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. **Res. 220 (WRC-23)** applies. (WRC-23)

5.457E The frequency bands 6 425-7 125 MHz in **Region 1** and 7 025-7 125 MHz in **Region 3** are identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. **Res. 220 (WRC-23)** applies.

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

5.457F In **Brazil**, **Mexico**, the frequency band 6 425-7 125 MHz is identified for the terrestrial component of International Mobile Telecommunications (IMT). The use of this frequency band for the implementation of IMT is subject to seeking agreement under No. **9.21** with neighbouring countries. 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. **Res. 220 (WRC-23)** applies.

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

5.458 In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out.

Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 025 MHz and 7 075-7 250 MHz.

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

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

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

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

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

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

5.461 *Additional allocation:* the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**, , with the exception that No. **9.21** shall not apply to the geostationary-satellite networks in the mobile-satellite service for which complete coordination information is received by the Bureau as of 1 January 2025 with respect to non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025. Non-geostationary-satellite systems for which complete coordination or notification information, according to the case, is received by the Bureau as of 1 January 2025 shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the mobile-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply. (WRC 23)

5.461A The use of the band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary-satellite systems. (WRC-23)

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

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

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

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

5.462A In Regions 1 and 3 (except for Japan), in the band 8 025-8 400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following 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	$0^o \leq \theta < 5º$
$-135 + 0.5\,(\theta - 5)$ dB(W/m^2) in a 4 kHz band	for	$5º \leq \theta < 25º$
-125 dB(W/m^2) in a 1 MHz band	for	$25º \leq \theta \leq 90º$ (WRC-12)

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

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

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

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

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

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

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

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

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

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

5.473A In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. 5.337 operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. 5.471. (WRC-07)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.480A In the following countries in **Region 2**: **Brazil**, **Colombia**, **Costa Rica**, **Cuba**, **Dominican Rep.**, **Ecuador**, **Guatemala**, **Jamaica**, **Mexico**, **Paraguay**, **Peru**, **Uruguay**, the frequency band 10-10.5 GHz is identified for the implementation of the terrestrial component of International Mobile Telecommunications (IMT). The implementation of this identification in **Mexico** is subject to seeking agreement with the United States under No. **9.21**. The use of the frequency band 10 10.5 GHz by IMT stations in the mobile service shall not claim protection from systems in 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. **Res. 219 (WRC-23)** applies. (WRC 23)

5.481 *Additional allocation*: in Algeria, Germany, Angola, Brazil, China, Colombia, Costa Rica, Côte d'Ivoire, Cuba, Djibouti, the Dominican Republic, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Jamaica, Japan, Kenya, Morocco, Mexico, Nigeria, Oman, Uzbekistan, Pakistan, Palestine*, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Somalia, Suriname, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-23)

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 frequency bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.3-17.7 GHz (space-to-Earth) in Region 2, 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall

* Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference, and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

be rapidly eliminated. In Region 2, No. **22.2** shall continue to apply in the frequency band 17.3-17.7 GHz. (WRC-23)

5.484B Resolution **155 (Rev.WRC-19)** shall apply. (WRC-19)

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)

5.494 *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, Palestine[*], 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-23)

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.**496A** The frequency band 12.75-13.25 GHz (Earth-to-space) may be used by earth stations in motion, limited to earth stations on aircraft and vessels, communicating with geostationary space stations in the fixed-satellite service. **Res. 121 (WRC-23)** shall apply. (WRC 23)

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

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

[*] Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference, and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

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 Hungary, Japan, Kyrgyzstan, Romania and Turkmenistan, the frequency band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-23)

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) 4.7*D* + 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 frequency band 14-14.5 GHz, ship earth stations with an equivalent isotropically radiated power (e.i.r.p.) greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (Rev.WRC-23)**. This footnote shall not apply to ship earth stations for which the complete Appendix **4** information has been received by the Bureau prior to 5 July 2003. (WRC-23)

5.506B Earth stations located on board vessels communicating with space stations in the fixed-satellite service may operate in the frequency band 14-14.5 GHz without the need for prior agreement from Cyprus and Malta, within the minimum distance given in Resolution **902 (Rev.WRC-23)** from these countries. (WRC-23)

5.508 *Additional allocation:* in Germany, 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-23)

5.508A In the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-23)

5.509A In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, 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-23)

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 14.5-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **164 (WRC-15)**, 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-23)

5.509F 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)**, 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-23)

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

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

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

5.511 *Additional allocation:* in Saudi Arabia, Bahrain, Cameroon, Djibouti, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Oman, Pakistan, Qatar, the Syrian Arab

Republic and Somalia, the frequency band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-23)

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)

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

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

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

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

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

5.514 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, Djibouti, 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,

Somalia, 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-23)

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

5.515B In the frequency band 17.3-17.7 GHz, the use of the fixed-satellite service (space-to-Earth) by geostationary-satellite space stations in **Region 2** shall not cause harmful interference to space station receivers nor claim protection from the broadcasting-satellite service feeder-link earth stations operating under "rr_ref_1% in all three **Regions**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. The notifying administration for the fixed-satellite service (space-to-Earth), when submitting **Appendix 4** information elements, shall provide a firm, objective, actionable, measurable and enforceable commitment that, in the event of harmful interference being reported to space station receivers in **Appendix 30A**, it shall take immediate action to eliminate the interference or reduce it to an acceptable level. (WRC 23)

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

5.516A 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)

5.517A 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)

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

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

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

5.521 *Alternative allocation:* in the United Arab Emirates, 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-23)

5.**521A** For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or parts thereof, by space stations in the inter-satellite service, **Res. 679 (WRC-23)** shall apply. Such use is limited to space research, space operation and/or Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space. When using these frequencies, administrations shall ensure that this inter-satellite service is used only for the aforementioned purposes and is not subject to coordination under No. **9.11A**. For use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz, 27.5-29.1 GHz and 29.5-30 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites or between non-geostationary satellites and geostationary satellites. For use of the frequency band 29.1-29.5 GHz by space stations, the allocation is limited to inter-satellite links between non-geostationary satellites and geostationary satellites. No. **4.10** does not apply. (WRC 23)

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

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

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

5.523A The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A** and No. **22.2** does not apply. 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-23)

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)

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

5.523E No. **22.2** 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, Djibouti, 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, Palestine*, 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-23).

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-

* Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

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 **Res. 156 (Rev.WRC-23)**. (WRC-23)

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

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

5.530A Unless otherwise agreed between the administrations concerned, any station in the fixed or mobile services of an administration shall not produce a power flux-density in excess of -120.4 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).

5.530E 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 (Rev.WRC-23)**. (WRC-23)

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

5.531B Aircraft stations in the aeronautical mobile (OR) service operating in the frequency band 22-22.2 GHz are subject to agreement obtained under No. **9.21** with respect to the fixed service and shall not cause harmful interference to, nor claim protection from, the fixed service. The following power flux-density values shall be used as a threshold for coordination under No. **9.21**:

-110 dB(W/(m^2 · MHz)) for $0° \le \theta \le 12.6°$

$2.86\,\theta - 146$ dB(W/(m^2 · MHz)) for $12.6°$

$0.87\,\theta - 116$ dB(W/(m^2 · MHz)) for $15°$

$0.067\,\theta - 92$ dB(W/(m^2 · MHz)) for $30°$ where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

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

5.531C Stations in the aeronautical mobile (OR) service operating in the frequency band 22 22.2 GHz shall not cause harmful interference to the radio astronomy service operating in the frequency band 22.21-22.5 GHz. The aggregate power flux-density (pfd) received from these stations at any radio astronomy station operating in the frequency band 22.21-22.5 GHz shall be in compliance with the protection criteria provided in **Rec. ITU-R RA.769-2** and **Rec. ITU-R RA.1513-2**, unless specifically agreed by the affected administration(s). (WRC 23)

5.531D The use of the aeronautical mobile (OR) service in the frequency band 22-22.2 GHz outside national boundaries shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations. (WRC 23)

5.531F In order to protect stations of the Earth exploration-satellite service (passive) operating in the frequency band 22.21-22.5 GHz, the unwanted equivalent isotropically radiated power (e.i.r.p.) of stations operating in the aeronautical mobile (OR) service shall not exceed −23 dBW in any 100 MHz band in the frequency band 22.21 22.5 GHz. (WRC 23)

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

5.532A The location of earth stations in the space research service shall maintain a separation distance of at least 54 km from the respective border(s) of neighbouring countries to protect the existing and future deployment of fixed and mobile services unless a shorter distance is otherwise agreed between the corresponding administrations. Nos. **9.17** and **9.18** do not apply. (WRC 12)

5.532AA 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 (Rev.WRC-23)**. (WRC-23)

5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)

5.532B Use of the band 24.65-25.25 GHz in Region 1 and the band 24.65-24.75 GHz in Region 3 by the fixed-satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5 m. (WRC-12)

5.534A 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 (Rev.WRC-23)**. 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-23)

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

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

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)

5.536B In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Türkiye, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Somalia, Sudan, Sweden, Tanzania, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution **242 (Rev.WRC-23)** applies. (WRC-23)

5.536C In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-12)

5.537A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the frequency band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-19)**. (WRC-19)

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

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

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

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

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

5.542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Palestine*, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the frequency band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (WRC-23)

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

5.543B The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **167 (Rev.WRC-23)**. (WRC-23)

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

5.545 *Different category of service:* in Armenia, Georgia, 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, Djibouti, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Türkiye, Kyrgyzstan, Romania, the United Kingdom, Somalia, South Africa, Tajikistan and Turkmenistan, 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-23)

5.547 The frequency bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service. Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-23)

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

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

5.547C *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 frequency band 32.3-33 GHz, for the radionavigation service in the frequency band 32-33 GHz, and for the space research service (deep space) in the frequency band 31.8-32.3 GHz, administrations shall take all necessary measures to

* Pursuant to Resolution 99 (Rev. Dubai, 2018) of the Plenipotentiary Conference and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707 (Rev.WRC-23)**). (WRC-23)

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, , Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

5.549A In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed −73.3 dB(W/m^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 (Rev.WRC-23)** applies. (WRC-23)

5.550C The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space to Earth), 47.2-50.2 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)

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

5.550D The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. **5.43A** does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **168 (Rev.WRC-23)**. (WRC-23)

5.550E The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile-satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to-Earth) is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite and mobile-satellite

services but not with non-geostationary-satellite systems in other services. No. **22.2** shall continue to apply for non-geostationary-satellite-systems. (WRC-19)

5.551F *Different category of service*: in Japan, the allocation of the band 41.5-42.5 GHz to the mobile service is on a primary basis (see No. **5.33**). (WRC-97)

5.551G 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)

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

5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, Djibouti, Egypt, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Somalia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **244 (Rev.WRC-23**) applies. (WRC-23)

5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (Rev.WRC-23)** applies. (WRC-23)

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

5.554A 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)

5.555B 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)

5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (Rev.WRC-23)** applies. (WRC-23)

5.559B The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. **4.10** do not apply. (WRC-15)

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

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

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

5.561B In Japan, use of the band 84-86 GHz, by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit. (WRC-2000)

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

5.562A In the bands 94-94.1 GHz and 130-134 GHz, transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the

transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. (WRC-2000)

5.562B In the frequency bands 105-109.5 GHz, 111.8-114.25 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-19)

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

5.562D *Additional allocation*: In Korea (Rep. of), the frequency bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis. Radio astronomy stations in Korea (Rep. of) operating in the frequency bands referred to in this footnote shall not claim protection from, or constrain the use and development of, services in other countries operating in accordance with the Radio Regulations. (WRC-15)

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

5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed –144 dB(W/(m2 ⋅ MHz)) for all angles of arrival. (WRC-2000)

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

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

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

5.564A For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz:

The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications.

The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution **731 (Rev.WRC-23)**.

In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis, in accordance with Resolution **731 (Rev.WRC-23)**.

The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-23)

5.565 The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service applications:

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

– Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz,

296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz,

416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz,

634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz,

823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz,

968-973 GHz and 985-990 GHz.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-12)

Annex B: RR Footnotes Containing ~~*Explicit*~~ References to African country names

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.54B		A													A																			A		A										A				A				6
5.67B		A													A																														A	A				A				5
5.68	A											A		A																																									3
5.69																																													A										1
5.70	A		A		A		A		A			A		A					A	A						A	A			A	A					A			A									A	A					A	A	19
5.80A		A									A				A	A													A				A		A										A		A				A				10
5.80B		A									A				A	A													A				A												A		A				A				9
5.87			A		A														A							A				A					A	A	A																	8
5.93																																						A											A						2
5.98									A		A						A		A																									A						A				6
5.99															A													A																				A	A					4
5.107																	A	A	A									A																A										5
5.117																											A																						A					2
5.123	A				A														A							A				A					A	A																A	A	9
5.128					A	A			A																						A						A											A						6

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.133																																					A																1
5.140			A																																									A					A				3
5.141																A		A		A				A						A	A						A															7
5.141B		A			A						A				A	A		A						A						A			A	A		A			A						A	A			A				15
5.143C		A									A				A	A														A				A		A			A						A	A			A				11
5.152													A																																									1
5.156																																							A														1
5.160					A		A							A																										A												4
5.164	A	A			A								A						A		A								A	A		A	A					A									A	A	A				14
5.165			A							A		A				A														A					A		A							A	A	A	A	A					12
5.169	A				A														A								A				A					A				A										A	A	10
5.169A		A	A			A	A								A	A						A			A	A			A					A		A								A	A	A			A	A			17
5.169B		A														A													A																	A				A				5
5.171	A				A									A					A								A				A	A					A													A	A	11
5.181																A																																					1
5.194																																														A								1
5.201																A																A				A								A								4

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.202																															A											A													2
5.206																A																																								1
5.211																								A		A					A														A			A			A					6
5.212	A		A		A				A	A		A		A					A		A	A	A	A			A	A	A		A				A	A		A	A				A				A	A		A	A	A	26
5.214																		A		A						A																			A	A	A	A							7
5.221	A	A		A	A					A		A	A		A	A		A	A	A	A		A	A	A	A	A		A			A	A			A	A				A		A	A		A	A	A	A	A	A	A	34
5.225A		A																																																				1
5.228AC	A																																																						1
5.229																																																						0
5.237												A				A		A		A		A		A					A		A				A								A	A				A						11
5.243																																															A									1
5.246		A																																	A																			2
5.251																																						A																1
5.252	A				A														A								A			A					A	A													A	A		9
5.259																A																																							1
5.262					A											A												A																	A				A					5
5.274																																																			A					1

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.275																													A																										1
5.276		A				A									A	A		A		A				A		A			A								A	A					A		A			A					14
5.277			A							A		A		A	A																A									A							A						8
5.286E								A																														A															2
5.294										A			A			A				A									A												A						A						7
5.296	A	A	A	A	B	A	A			A		A	A		A	A			A		A	A	A			A	A		A		A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	A	A	A	36
5.300										A						A													A																	A							4
5.304	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	52
5.306	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	52
5.307B																						A										A				A		A					A			A	A					7
5.322			B	B	B	B		B	B	B	B	B	B	B			B	B	B	B	B	B	B	B	B	B		B		B		B	B	B		B		B		B	B	B	B	B	B	B	B	B					38
5.330			B							A					A	A		A		A																	A	A	A		A	A					10
5.331	A	B		B		A	A			A					A	A	A						A	A		A	A			A		A	A					A					A	A	A			A					19
5.346	A	A	A	B	A	A	A		A	A		A	A	A	A	A			A		A	A	A	A		A	A	A		A	A	A	A	A	A	A	A	A	A		A	A		A	A	A	A	A	A	A	A	A	44
5.349										A					A	A																			A																4
5.352A		A														A								A							A	A		A				A													7
5.355												A			A	A		A																										A	A	A		A	A					9

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.359										A														A	A							A																		A	A			6
5.369			A											A				A		A								A		A																	A	A			A			A		11
5.379																																						A																1
5.382												A				A		A		A				A									A											A									7
5.389F		A						A								A															A																		A				5
5.401			A											A				A	A	A								A	A	A		A																A			A		12
5.422												A	A	A	A	A		A			A			A	A							A					A											A				13
5.429				A						A		A	A	A	A	A										A			A																				A				11
5.429A	A		A		A	A	A	A	A		A			A	A		A	A	A	A		A	A	A	A		A	A		A	A		A	A		A	A	A	A	A	A	A	A	A		A	A	A			A	A	40
5.429B	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	A	A	A		A	A		A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	48
5.433B			A		A																			A			A				A															A								6
5.434B		A		A		A	A		A	A	A	A	A	A	A	A					A	A	A	A		A		A	A	A		A	A	A	A	A	A	A	A	A	A	A			A	A	A		A	A		A		38
5.435A			A		A																			A			A				A															A								6
5.441B	A		A	A	A	A	A	A		A		A	A	A	A				A		A		A	A			A	A		A	A	A					A	A	A							A			A	A		A	A	A	30
5.446C		A														A																		A											A	A				A				6
5.447													A			A																																				A				3
5.453	A		A	A	A	A	A			A		A	A	A	A	A	A		A		A		A	A		A	A		A	A	A			A		A	A	A	A	A						A		A	A	A		A	A	A	35

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.457						A							A																			A							A																4
5.457B		A									A				A	A													A				A		A												A				A				9
5.468							A			A		A			A	A			A		A					A			A			A	A		A				A			A			A		A		A	A	A	A			20
5.471		A														A													A																		A								4
5.473A		A														A													A																										3
5.474A		A														A																																			A				3
5.477		A								A					A	A		A		A								A											A						A	A	A					A			12
5.481		A	A										A		A	A										A									A				A												A				9
5.482		A														A													A				A		A				A												A				7
5.483																A																																							1
5.494		A							A	A		A	A	A	A	A		A		A	A		A	A					A	A		A			A				A						A	A	A		A	A					23
5.495																																																			A	A			2
5.500		A								A					A	A					A									A		A	A		A			A	A						A	A	A		A		A				16
5.504B	A																																																						1
5.504C					A								A			A								A															A												A				6
5.505		A			A					A		A			A	A			A		A			A								A	A		A										A	A	A		A						16
5.508																													A																										1

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.508A					A								A			A								A															A												A				6
5.509A					A					A			A			A					A			A											A				A												A				9
5.509B		A														A																	A		A												A								5
5.509C		A														A																	A		A												A								5
5.509D		A														A																	A		A												A								5
5.509E		A																															A		A												A								4
5.509F		A																															A		A												A								4
5.510A		A																											A				A		A																A				5
5.511										A					A	A								A																					A										5
5.512		A								A		A		A		A		A								A			A			A	A		A			A							A	A	A		A	A					17
5.513										A		A		A		A		A								A						A	A		A			A																	10
5.514		A								A					A														A										A						A	A	A								8
5.522C		A														A													A						A																A				5
5.524		A								A		A		A	A	A					A			A								A	A		A				A						A	A	A		A	A	A				18
5.536B		A														A										A			A																		A	A						A	7
5.536C		A			A					A	A				A	A										A									A				A						A	A	A	A			A		A	A	16
5.537A										A																																					A								2

c	AFS	ALG	AGL	BEN	BOT	BFA	BDI	CPV	CAF	CME	COM	COG	CTI	COD	DJI	EGY	GNE	ERI	SWZ	ETH	GAB	GMB	GHA	GUI	GNB	KEN	LSO	LBR	LBY	MDG	MWI	MLI	MTN	MAU	MRC	MOZ	NMB	NGR	NIG	RRW	STP	SEN	SEY	SRL	SOM	SSD	SDN	TZA	TCD	TGO	TUN	UGA	ZMB	ZWE	Total
5.542		A								A		A			A	A		A		A				A							A	A		A									A		A		A						14
5.546	A														A	A																														A										4
5.549														A		A					A								A			A	A		A				A						A	A	A			A	A				13
5.553A	A	A	A	A	A	A		A					A		A	A			A		A	A	A	A	A		A	A		A	A	A	A	A	A	A	A	A			A	A	A	A		A	A		A	A	A	A	A	39
5.553B	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	52
Total A	21	44	19	9	27	14	13	6	9	33	10	26	21	22	35	67	4	21	21	19	18	11	13	30	8	20	19	13	36	17	17	31	35	9	34	17	18	20	35	12	4	11	5	7	41	29	46	17	30	26	37	15	19	17	
Total B	2	3	5	5	4	3	2	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	3	2	3	3	3	2	3	2	3	2	3	3	3	3	3	3	3	3	2	3	3	0	0	2	2	

Annex C: African countries and their orbital positions in the satellite planned services

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

Appendix 30: Provisions for all services and associated Plans and List for the broadcasting-satellite service in the frequency band 11.7-12.5 GHz (in Region 1)

Appendix 30A: Provisions and associated Plans and List for feeder links for the broadcasting satellite service (11.7-12.5 GHz in Region 1) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1

Appendix 30B: Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

Table 1: Orbital position of assignments in the Appendices **30** and **30A** Plans and of allotments in the Appendix **30B** Plan

No.	ITU Member State Name	Adm	APP30/30A Orbital slot	APP30B Orbital slot
1	Afrique du Sud	AFS	4.8°E	71°E
2	Algeria	ALG	24.8°W	33.5°W
3	Angola	AGL	24.8°W	36.1°W
4	Benin	BEN	19.2°W	30.6°W
5	Botswana	BOT	0.8°W	21.2°E
6	Burkina Faso	BFA	30°W	10.79°E
7	Burundi	BDI	11°E	3.5°W
8	Cabo Verde	CPV	33.5°W	85.7°W
9	Cameroon	CME	13°W	7.98°E
10	Central African Rep.	CAF	13.2°W	14.4°E
11	Comoros	COM	29°E	94.5°E
12	Congo (Rep. of the)	COG	13.2°W	16.35°W
13	Côte d'Ivoire	CTI	24.8°W	15.76°W
14	Dem. Rep. of the Congo	COD	19.2°W	50.95°E
15	Djibouti	DJI	16.8°E	17.46°W
16	Egypt	EGY	7°W	67.11°E
17	Equatorial Guinea	GNE	18.8°W	32.3°W
18	Eritrea[7]	ERI	22.8°E	-
19	Eswatini	SWZ	4.8°E	30.1°E
20	Ethiopia	ETH	36°E	58.3°E
21	Gabon	GAB	13.2°W	39°E
22	Gambia	GMB	37.2°W	34°W
23	Ghana	GHA	25°W	15.9°E

[7] Administration of Eritrea may apply Article 7 of Appendix **30B** to obtain an allotment in the FSS Plan.

No.	ITU Member State Name	Adm	APP30/30A Orbital slot	APP30B Orbital slot
24	Guinea	GUI	37°W	27.5°E
25	Guinea-Bissau	GNB	30°W	40°E
26	Kenya	KEN	0.8°W	78.2°E
27	Lesotho	LSO	4.8°E	19.3°W
28	Liberia	LBR	33.5°W	41.8°W
29	Libya	LBY	24.8°W	28.9°E
30	Madagascar	MDG	29°E	16.9°E
31	Malawi	MWI	4.8°E	28°E
32	Mali	MLI	19.2°W	6°W
33	Mauritania	MTN	36.8°W	21.1°W
34	Mauritius	MAU	29°E	92.2°E
35	Morocco	MRC	25.2°W	32.86°E
36	Mozambique	MOZ	1°W	90.6°E
37	Namibia	NMB	18.8°W	12.2°E
38	Niger	NGR	37.2°W	38.5°W
39	Nigeria	NIG	19.2°W	41.82°E
40	Rwanda	RRW	11°E	17.6°E
41	Sao Tome and Principe	STP	7°W	30.25°E
42	Senegal	SEN	37°W	48.4°W
43	Seychelles	SEY	42.5°E	42.25°E
44	Sierra Leone	SRL	33.5°W	51.8°W
45	Somalia	SOM	37.8°E	98.4°E
46	South Sudan[8]	SSD	-	-
47	Sudan	SDN	7°W	23.55°E
48	Tanzania	TZA	16°W	67.5°E
49	Tchad	TCD	17°E	9.9°W
50	Togo	TGO	30°W	23.15°W
51	Tunisia	TUN	25.2°W	5.74°E
52	Uganda	UGA	17°E	31.5°E
53	Zambia	ZMB	0.8°W	39.55°E
54	Zimbabwe	ZWE	0.8°W	65.6°E

Table 2: Satellite networks submitted under Resolution **559 (WRC-19)** from ATU Member States including those from Administrations of Mauritius, Seychelles and Madagascar

No.	Adm	Sat.name	Orb.Pos. [°E]	Channels (downlink) (11.7 – 12.5 GHz)	Pol. DL	Channels (feeder-link) (17.3 – 18.1 GHz)	Pol. FL
1	AFS	AFS_SASAT3	-8.2	1 3 5 7 9 11 13 15 17 19	CL	22 24 26 28 30 32 34 36 38 40	CL
2	BDI	BDI_SAT	-26.8	21 23 25 27 29 31 33 35 37 39	CL	22 24 26 28 30 32 34 36 38 40	CR
3	BEN	BEN_SAT	-30.6	2 4 6 8 10 12 14 16 18 20	CL	1 3 5 7 9 11 13 15 17 19	CR
4	BOT	BOT_001	-26.6	21 23 25 27 29 31 33 35 37 39	CL	2 4 6 8 10 12 14 16 18 20	CR
5	COD	COD_SAT1	-23.5	22 24 26 28 30 32 34 36 38 40	CR	21 23 25 27 29 31 33 35 37 39	CL

[8] Administration of Republic of South Sudan is currently applying relevant procedures to obtain an assignment in the BSS Plan (Appendix **30**/**30A**) and a new allotment in the FSS Plan (Appendix **30B**)

No.	Adm	Sat.name	Orb.Pos. [°E]	Channels (downlink) (11.7 – 12.5 GHz)	Pol. DL	Channels (feeder-link) (17.3 – 18.1 GHz)	Pol. FL
6	COG	COG_SAT	-37.3	1 3 5 7 9 11 13 15 17 19	CR	2 4 6 8 10 12 14 16 18 20	CL
7	COM	COM_BSS	-3.7	3 5 7 9 11 13 15 17 19 21	L/0	1 3 5 7 9 11 13 15 17 19	L/90
8	DJI	DJI_SAT	-17.46	1 3 5 7 9 11 13 15 17 19	CL	2 4 6 8 10 12 14 16 18 20	CR
9	GAB	GAB_37.3W	-37.3	21 23 25 27 29 31 33 35 37 39	CR	22 24 26 28 30 32 34 36 38 40	CL
10	GNE	GNE_SAT	-42	22 24 26 28 30 32 34 36 38 40	CL	21 23 25 27 29 31 33 35 37 39	CR
11	KEN	KEN_SAT_001	-9.2	2 4 6 8 10 12 14 16 18 20	CL	21 23 25 27 29 31 33 35 37 39	CL
12	LSO	LSO_SAT	-16	2 4 6 8 10 12 14 16 18 20	CL	21 23 25 27 29 31 33 35 37 39	CL
13	MAU	MAU_300	68.4	22 24 26 28 30 32 34 36 38 40	CL	22 24 26 28 30 32 34 36 38 40	CL
14	MDG	MDG_SAT	69.5	2 4 6 8 10 12 14 16 18 20	L/90	2 4 6 8 10 12 14 16 18 20	L/0
15	MLI	MLI_SAT_100	-42	1 3 5 7 9 11 13 15 17 19	CL	1 3 5 7 9 11 13 15 17 19	CR
16	MOZ	MOZ_SAT	-8.2	1 3 5 7 9 11 13 15 17 19	CR	2 4 6 8 10 12 14 16 18 20	CL
17	MWI	MWI_SAT	-23.5	22 24 26 28 30 32 34 36 38 40	CL	22 24 26 28 30 32 34 36 38 40	CR
18	NIG	NIG11903	-42	21 23 25 27 29 31 33 35 37 39	CR	22 24 26 28 30 32 34 36 38 40	CL
19	NMB	NMB_SAT	-34	1 3 5 7 9 11 13 15 17 19	CL	1 3 5 7 9 11 13 15 17 19	CR
20	RRW	BSS-RRW	-9.2	1 3 5 7 9 11 13 15 17 19	CR	22 24 26 28 30 32 34 36 38 40	CR
21	SDN	SUDANBSS	-16	1 3 5 7 9 11 13 15 17 19	CR	2 4 6 8 10 12 14 16 18 20	CL
22	SEY	SEY_SAT	45.2	1 3 5 7 9 11 13 15 17 19	CL	1 3 5 7 9 11 13 15 17 19	CR
23	SOM	SOM001	-4.4	3 5 7 9 11 13 15 17 19 21	L/0	21 23 25 27 29 31 33 35 37 39	L/90
24	SSD	SSUD_SAT	-23.9	1 3 5 7 9 11 13 15 17 19	CL	2 4 6 8 10 12 14 16 18 20	CR
25	SWZ	SWZ_SAT	-23.9	1 3 5 7 9 11 13 15 17 19	CR	1 3 5 7 9 11 13 15 17 19	CR
26	TCD	TOUMAI	-34	1 3 5 7 9 11 13 15 17 19	CR	2 4 6 8 10 12 14 16 18 20	CL
27	TUN	TUN_BSS	-37.3	22 24 26 28 30 32 34 36 38 40	CL	21 23 25 27 29 31 33 35 37 39	CR
28	TZA	TANSAT1	-16	1 3 5 7 9 11 13 15 17 19	CL	22 24 26 28 30 32 34 36 38 40	CR
29	UGA	UGASAT	-26.6	1 3 5 7 9 11 13 15 17 19	CR	1 3 5 7 9 11 13 15 17 19	CL
30	ZMB	ZMB_2020	-23.9	2 4 6 8 10 12 14 16 18 20	CR	1 3 5 7 9 11 13 15 17 19	CL
31	ZWE	ZWE_2020	-16	1 3 5 7 9 11 13 15 17 19	CR	2 4 6 8 10 12 14 16 18 20	CR

Table 3: Satellite networks submitted under Article 4 of Appendices **30** and **30A**

Adm	Ntc.ID	Sat.name	Orb.Pos. [°E]	E/R	Freq.min. [MHz]	Freq.max. [MHz]	Status
ALG	113552013	ALGBSAT-24.8W	-24.8	E	12142	12498	Part B
ALG	113554013	ALGBSAT-24.8W	-24.8	R	17742	18098	Part B
EGY	114552009	EGYNILE1-BSS	-7	E	11710.98	12492	Part A
EGY	114554009	EGYNILE1-BSS	-7	R	14508.8	18092	Part A
EGY	114552010	EGYNILE2-BSS	-19	E	11710.98	12492	Part A
EGY	114554010	EGYNILE2-BSS	-19	R	14508.8	18092	Part A
EGY	114552011	EGYNILE3-BSS	15	E	11710.98	12492	Part A
EGY	114554011	EGYNILE3-BSS	15	R	14508.8	18092	Part A
EGY	99552001	NILESAT-102	-7	E	11845.24	12319.38	Part B
EGY	99554001	NILESAT-102	-7	R	17445.24	17919.38	Part B
EGY	105552004	NILESAT-103	-7	E	11710.98	12492	Part B

Adm	Ntc.ID	Sat.name	Orb.Pos. [°E]	E/R	Freq.min. [MHz]	Freq.max. [MHz]	Status
EGY	105554004	NILESAT-103	-7	R	17310.98	18072.82	Part B
EGY	100551013	NILESAT-1S	-7	E	11730.16	12089.22	Part B
EGY	100551613	NILESAT-1S	-7	R	17330.16	17689.22	Part B
EGY	119552002	NILESAT-BSS-Z	-7	E	11710.98	12472.82	Part A
EGY	119554002	NILESAT-BSS-Z	-7	R	14508.8	18072.82	Part A
ETH	116552010	ETHIOSAT-1	58.3	E	11710.98	12492	Part A
ETH	116554010	ETHIOSAT-1	58.3	R	14508.8	18092	Part A
TUN	120552063	TUN_BSS1	-37.3	E	12346.92	12450.64	Part A
TUN	120554063	TUN_BSS1	-37.3	R	17927.74	18031.46	Part A

Table 4: Satellite networks submitted under Article 6 and 7 of Appendix **30B**

Adm	Ntc.ID	Sat.name	Orb.Pos. [°E]	E/R	Freq.min. [MHz]	Freq.max. [MHz]	Status
CTI	103559025	RASCOM-1F	2.9	E	4500	4800	A6B
				E	10700	11450	A6B
				R	12750	13250	A6B
				R	6725	7025	A6B
CTI	102559002	RASCOM-2F	2.9	E	10700	11450	A6B
				E	4500	4800	A6B
				R	12750	13250	A6B
				R	6725	7025	A6B
ETH	116559011	ETHIOSAT-1	58.3	E	10700	11450	A6A
				E	4500	4800	A6A
				R	6725	7025	A6A
				R	12750	13250	A6A
SSD	120559038	SSD00000[9]	-23.9	E	4500	4800	A6A
				E	10700	11450	A6A
				R	12750	13250	A6A
				R	6725	7025	A6A

[9] This submission is to obtain an allotment in the FSS Plan for the Administration of South Sudan.

Annex D: Satellite Planned Bands relevant to African countries

Satellite frequency bands relevant to African countries pertaining to **Appendix 30** (BSS) and **Appendix 30A** (BSS Feeder Links):

- **APP30:** 11.7 – 12.5 GHz (all countries)
- **APP30A:** 14.5 – 14.8 GHz (AFS, CME, ETH, GHA, MOZ, NIG, NMB, SDN, SEN, SOM, SEY and TGO)
  17.3 – 18.1 GHz (AGL, ALG, BDI, BEN, BFA, BOT, CAF, COD, COG, COM, CPV, CTI, DJI, EGY, ERI, GAB, GMB, GNB, GNE, GUI, KEN, LBR, LBY, LSO, MAU, MDG, MLI, MRC, MTN, MWI, NGR, RRW, SEY, SRL, STP, SWZ, TCD, TUN, TZA, UGA, ZMB and ZWE)

Satellite frequency bands relevant to African countries pertaining to **Appendix 30B** (FSS):

- **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 E: Frequencies for Public Protection and Disaster Relief (PPDR), Distress/Emergency and Safety

This annex and its content are primarily intended for harmonisation of frequencies for PPDR, Emergency and Safety in Africa, and should not be taken as exhaustive. In addition, the technical parameters referenced in this annex should be interpreted in the context of its applicability according to the use and the corresponding national decisions.

Recommendation ITU-R M.2015-2 includes regional frequency arrangements for radiocommunication systems for public protection and disaster relief in accordance with Resolution 646 (Rev.WRC-19).

1. PUBLIC PROTECTION AND DISASTER RELIEF (PPDR) RADIOCOMMUNICATIONS

No.	Frequency or frequency range	Channel Bandwidth	EIRP and technical conditions	Primary usage	Emission type
1	380-390/ paired with 390-399.9 MHz	25 kHz	33dBm (2Watts) for Mobile Stations 57.15 dBm (518 Watts) for Base Stations EN 300 394-1 Rec. ITU-R M.2009-2	Public Protection and disaster relief (PPDR) Trunked radio operations including Search and Rescue	21K0D1W
2	400- 430 MHz (410-420 paired with 420-430)	12.5/25 kHz	50.15 dBm (103.5 Watts) for narrowband Mobile Stations 60dBm (1000 Watts) for Base Stations EN 300 394-1	Public Protection and disaster relief (PPDR) operations including Search and Rescue	21KF3E 21K0D1W 7K60FXE
3	430-440 MHz	12.5/25 kHz	57.15 dBm (103.5 Watts) for Mobile Stations 60dBm (1000 Watts) for Base Stations	Public Protection and disaster relief (PPDR) operations including Search and Rescue	21KF3E 7K60FXE 21K0D1W
4	440-450 MHz	12.5, 25, 200 kHz 1.250 MHz	46.15 dBm (41 Watts) for Mobile Stations 60dBm (1000Watts) for Base Stations	Public Protection and disaster relief (PPDR) narrowband and wideband operations including Search and Rescue	21KF3E 7K60FXE 8K10F1E 8K10F1W 1M25F9W
5	450-470 / 460-470[10]	12.5/25 kHz 1250 kHz	46.15 dBm (41 Watts) for Mobile Stations (NB) 60dBm for Base stations Maximum UE mean in-block power 37 dBm (BB) Rec. ITU-R M.2009-2	Public Protection and disaster relief (PPDR) operations including Search and Rescue	7K60FXE 8K10F1E 8K10F1W 21K0D1W 1M25F9W

[10] This band is also identified for IMT. See Annex F

No.	Frequency or frequency range	Channel Bandwidth	EIRP and technical conditions	Primary usage	Emission type
6	698-703/753-758 MHz[11]	5 MHz	LRTC specified in Annex 1 of ECC/DEC/ (16)02	Broadband PPDR Annex 1-1.4 of Rec. ITU R M 2015	5M00G7D 5M00W7W 5M00G2D 5M00D7D 10M00D7D
7	733-736/788-791MHz[12]	3 MHz	LRTC specified in Annex 1 of ECC/DEC/(16)02	Broadband PPDR	3M00G7D 3M00G2D 3M00W7W 3M00D7D

2. MARITIME SAFETY AND DISTRESS/EMERGENCY RADIOCOMMUNICATIONS

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
1	490 kHz	300 Hz (Rec. ITU-R M.1467-1)	RR Res.**339 (Rev.WRC-07)** applies	Transmission by coast stations or meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing (NBDP) telegraphy (national NAVTEX service).
2	500 kHz	1, 3, 5, 10 kHz (Rec. ITU-R M.2010-1)	No specific condition contained in the RR	Digital broadcasting of safety and security related information from shore-to-ships
3	518 kHz	300 Hz (Rec. ITU-R M.1467-1)	RR Res.**339 (Rev.WRC-07)** applies	Transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing telegraphy (International NAVTEX service).
4	2 174.5 kHz	300 Hz (Rec. ITU-R M.1467-1)	For ship station, maximum peak envelop power: 60 W (Rec. ITU-R M.1467-1)	International Global Maritime Distress and Safety System (GMDSS) distress frequency for narrow-band direct-printing telegraphy.
5	2 182 kHz	2 800 Hz	For coast station located north of latitude 32° N, maximum	International distress carrier frequency for radiotelephony. Distress calls and traffic,

[11] The band 694 – 790 MHz is identified for IMT. See Annex F.

[12] The bands 694 – 790 MHz and 790 – 960 MHz are identified for IMT. See Annex F.

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
		(RR **52.177**)	peak envelop power: 5 kW (RR **52.185**); For coast station located south of latitude 32° N, maximum peak envelop power: 10 kW (RR **52.186**); For ship station, maximum peak envelop power: 60W (Rec. ITU-R M.1467-1) In Region 1, for ship station, maximum mean power: 400 W. (RR **52.127**)	signals of emergency position-indicating radio-beacons (EPIRBs), urgency signal and urgency messages and the safety signal. GMDSS distress and safety traffic by radiotelephony. Search and Rescue (SAR) operations concerning manned space vehicles.
6	2 187.5 kHz	300Hz Rec. ITU-R M.1467-1	For ship station, maximum peak envelop power: 60W (Rec. ITU-R M.1467-1); In Region 1, for ship station, maximum mean power: 400 W. (RR **52.127**)	GMDSS distress and safety calls using digital selective calling (DSC).
7	4 125 kHz	2 800 Hz (RR **52.177**)	For coast station and ship station, maximum peak envelop power: <=1kW (30dBW) (RR **52.221.2**)	Carrier frequency used to supplement 2 182 kHz for distress and safety. GMDSS distress and safety traffic by radiotelephony. May be used by aircraft to communicate with stations of the Maritime Mobile service for distress and safety purposes, including SAR
8	4 177.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5kW (37 dBW). (RR **52.104**)	GMDSS distress and safety traffic by NBDP
9	4 207.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5 kW (37dBW)) (RR **52.143**); For ship station, maximum mean power: 1.5 kW (31.8dBW). (**RR 52.144**)	GMDSS distress and safety calls using DSC
10	4 209.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5kW (37 dBW). (RR **52.104**)	National NAVTEX service transmissions by coast stations by means of NBDP

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
			RR Res.**339 (Rev. WRC-07)**	
11	4 210 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5 kW (37 dBW). (RR **52.104**)	Transmission by coast stations of Maritime Safety Information (MSI) by means of NBDP.
12	6 215 kHz	2 800 Hz (RR**52.177**)	For coast station and ship station, maximum peak envelop power: 1kW (30 dBW) (RR **52.221.2**)	Carrier frequency used to supplement 2 182 kHz for distress and safety. GMDSS distress and safety traffic by radiotelephony.
13	6 268 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5 kW (37dBW)) (RR **52.104**)	GMDSS distress and safety traffic by NBDP
14	6 312 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5 kW (37dBW)) (RR**52.143**); For ship station, maximum mean power: 1.5 kW (31.8dBW). (**RR 52.144**)	GMDSS distress and safety calls using DSC
15	6 314 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 5 kW (37dBW)) (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP.
16	8 291 kHz	2 800 Hz (RR **52.177**)	For coast station, maximum mean power: 10kW (40 dBW) (RR **52.219**); For ship station, maximum mean power: 1.5kW (31.8 dBW) (RR **52.220**)	Carrier frequency for GMDSS distress and safety traffic by radiotelephony
17	8 364 kHz		RR **5.111** applies	Used by survival craft in SAR operations with stations of the Maritime and Aeronautical Mobile services.
18	8 376.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 10kW (40 dBW) (RR **52.104**)	GMDSS distress and safety traffic by NBDP
19	8 414.5kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 10 kW (40 dBW)) (RR **52.143**);	GMDSS distress and safety calls using DSC.

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
			For ship station, maximum mean power: 1.5 kW (31.8dBW) (RR **52.144**)	
20	8 416.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 10kW (40 dBW) (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP
21	10 003 kHz	Emissions must be confined in a band of ± 3 kHz about the frequency (RR **5.111**)	RR **5.111** applies	SAR operations concerning manned space vehicles
22	12 290 kHz	2 800 Hz (RR **52.177**)	For coast station, maximum peak envelop power: 10kW (40 dBW) (RR **52.219**); For ship station, maximum peak envelop power: 1.5kW (31.8 dBW) (RR **52.220**)	Carrier frequency for GMDSS distress and safety traffic by radiotelephony.
23	12 520 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15kW (41.8 dBW). (RR **52.104**)	GMDSS distress and safety traffic by NBDP.
24	12 577 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW)). (RR **52.143**); For ship station, maximum mean power: 1.5 kW (31.8dBW). (RR **52.144**)	GMDSS distress and safety calls using DSC.
25	12 579 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15kW (41.8 dBW). (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP
26	14 993 kHz	Emissions must be confined in a band of ± 3 kHz about the frequency (RR **5.111**)	RR **5.111 applies**	SAR operations concerning manned space vehicles.
27	16 420 kHz	2 800 Hz (RR **52.177**)	For coast station, maximum peak envelop power: 10 kW (40 dBW) (RR **52.219**); For ship station, maximum peak envelop power: 1.5 kW (31.8 dBW) (RR **52.220**)	Carrier frequency for GMDSS distress and safety traffic by radiotelephony.

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
28	16 695 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW). (RR **52.104**)	GMDSS distress and safety traffic by NBDP
29	16 804.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW)) (RR**52.143**) For ship station, maximum mean power: 1.5 kW (31.8 dBW) (RR **52.144**)	GMDSS distress and safety calls using DSC
30	16 806.5 kHz	500 Hz (RR Appendix 17)	Coast station: Maximum mean power is equal or less than 15 kW (41.8 dBW) (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP
31	19 680.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW) (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP
32	19 993 kHz	Emissions must be confined in a band of ± 3 kHz about the frequency (RR **5.111**)	RR **5.111**	SAR operations concerning manned space vehicles
33	22 376 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW)(RR **52.104**)	Transmission by coast stations of MSI by means of NBDP
34	26 100.5 kHz	500 Hz (RR Appendix 17)	For coast station, maximum mean power: 15 kW (41.8 dBW). (RR **52.104**)	Transmission by coast stations of MSI by means of NBDP.
35	121.45-121.55MHz	8kHz for A3X or A3E (ICAO SARPS Annex 10 Volume 3 to ICAO Convention) (Recommendation ITU-R M.690-3, Recommendation ITU-R SM.1138-3)	The Peak Effective Radiated Power (PERP) shall at no time be less than 50 mW.	Aeronautical emergency frequency for the purposes of distress and urgency for radiotelephony by stations of the Aeronautical Mobile service. May also be used for these purposes by survival craft stations. EPIRBs may also use this frequency. SAR operations concerning manned space vehicles.
36	123.1 MHz	8kHz for A3X or A3E (ICAO SARPS Annex 10 Volume	The peak Effective radiated power (PERP) shall at no time be less than 50 mW.	Auxiliary to 121·5 MHz, for use by stations of the Aeronautical Mobile service and by other mobile and land stations

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
		3 to ICAO Convention) (Recommendation ITU-R SM.1138-3)		engaged in coordinated SAR operations.
37	156.3 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50W (Rec. ITU-R M.489-2) Maximum carrier power for ship station: 25 W. (RR **52.260**) Maximum mean power for aircraft station: 5 W; however, a power of 1 W or less shall be used to the maximum extent possible. (RR **51.75**)	Refer to RR Appendix 15
38	156.525 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50 W (Recommendation ITU-R M.489-2) Maximum carrier power for ship station: 25 W (RR **52.260**) Maximum mean power for aircraft station: 5 W; however, a power of 1 W or less shall be used to the maximum extent possible. (RR **51.75**)	In the Maritime Mobile VHF service, the frequency 156·525 MHz is to be used exclusively for digital selective calling for distress, safety and calling
39	156.650 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50W (Rec. ITU-R M.489-2) Maximum carrier power for ship station: 25W (RR **52.260**)	Refer to RR Appendix 15
40	156.8 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50W (Rec. ITU-R M.489-2) Maximum carrier power for ship station: 25W. (RR **52.260**) Maximum mean power for aircraft station: 5 W; however, a power of 1 W or less shall be used to the maximum extent possible. (RR **51.75**)	International distress and safety frequency for radiotelephony. Used for the distress signal the distress call, distress traffic, the urgency signal urgency traffic and the safety signal. GMDSS distress and safety traffic by radiotelephony. May be used by aircraft stations for safety purposes only. SAR operations

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
				concerning manned space vehicles.
41	161.975 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50W (Rec. ITU-R M.489-2) Maximum carrier power for ship station: 25 W (RR **52.260**) Maximum mean power for aircraft station: 5 W; however, a power of 1 W or less shall be used to the maximum extent possible. (RR **51.75**)	Refer to RR Appendix 15
42	162.025 MHz	16 kHz (Rec. ITU-R M.489-2)	Maximum carrier power for coast station: 50 W (Recommendation ITU-R M.489-2) Maximum carrier power for ship station: 25 W (RR **52.260**) Maximum mean power for aircraft station: 5 W; however, a power of 1 W or less shall be used to the maximum extent possible. (RR **51.75**)	Refer to RR Appendix 15
43	242.95- 243.05 MHz	100kHz	RR **5.111** applies RR **5.256** applies	Survival craft stations and equipment used for survival purposes. SAR operations concerning manned space vehicles. Survival craft stations and equipment used for survival purposes on 243MHz.
44	406-406.1 MHz	6kHz (20dBc) (Rec. ITU-R M. 633-4, Cospas-Sarsat Doc. C/S T.001)	Maximum e.i.r.p.: 15dBW (Rec. ITU-R M. 633-4, Cospas-Sarsat Doc C/S T.001)	Satellite EPIRBs in the Earth-to-space direction.
45	1530-1544 MHz	8.2MHz (GSO); 5.8MHz (non-GSO) (Rec ITU-R M.1184-3)	Maximum beam e.i.r.p.: 58.4dBW (GSO) (Rec. ITU-R M.1184-3)	In addition to routine non-safety use, is used for distress and safety purposes in the space-to Earth direction in

No.	Frequency or frequency range	Bandwidth	EIRP and other technical conditions	Primary usage
				the Maritime Mobile-Satellite service.
46	1544-1545 MHz	100kHz or 200kHz (Rec. ITU-R M.1731-2)	Maximum e.i.r.p.: 7.1dBW (Rec. ITU-R M.1731-2)	Distress and safety operations including feeder links of satellites need to relay the emissions of satellite EPIRBs to Earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations
47	1621.35-1626.5	31.5kHz (Rep. ITU-R M.2369-0)	Maximum e.i.r.p.: User terminal (e-to-S): 10dBW; (Rep. ITU-R M.2369-0) RR **5.364** applies RR **5.366** (to which No. 4.10 applies) applies.	Refer to RR Appendix 15
48	1626.5-1645.5 MHz	8.2MHz (GSO) ; 5.8MHz (non-GSO) (Rec. ITU-R M.1184-3)	Maximum e.i.r.p.: 12.5 dBW(GSO); 12 dBW (non-GSO) (Rec. ITU-R M.1184-3)	In addition to routine non-safety use, is used for distress and safety purposes in the Earth-to-space direction in the Maritime Mobile-Satellite service
49	1645.5-1646.5 MHz	8.2MHz (GSO); 5.8MHz (non-GSO) (Rec. ITU-R M.1184-3)	Maximum e.i.r.p.: 12.5 dBW (GSO); 12 (non-GSO) (Rec. ITU-R M.1184-3)	Distress and safety operations including transmissions from satellite EPIRBs and relay distress alerts received by satellites in low polar earth orbits to geostationary satellites
50	9200-9500 MHz	Up to 300MHz (Rec. ITU-R M.628-5)	e.i.r.p. is not less than 26 dBm (essential value e.i.r.p.: 74 dBW) (Rec. ITU-R M.628-5)	Search and rescue Radar transponders to facilitate SAR

3. AERONAUTICAL SAFETY AND DISTRESS/EMERGENCY RADIOCOMMUNICATION

No.	Frequency or Frequency Range	Bandwidth	Maximum EIRP	Primary usage
1	3 023 kHz	2.8kHz (RR Appendix **27)**	Maximum mean power: 20W (13 dBW) (AP**27**/233)	Aeronautical mobile (R) 3 023 kHz may be used under the MMS for search and rescue operations
2	5680kHz	2.8kHz (RR Appendices **26** and **27)**	Maximum mean power: 20W (13 dBW) (AP**27**/233)	Aeronautical mobile (R) may be used under the MMS for search and rescue operations (see Article 31)
3	121.5 MHz	8kHz for A3X or A3E (ICAO SARPS Annex 10 Volume 3 to ICAO Convention) (Rec. ITU-R M.690-3, Rec. ITU-R SM.1138-3)	The Peak Effective Radiated Power (PERP) shall at no time be less than 50 mW. (ICAO SARPS Annex 10 Volume to ICAO Convention)	International Distress Frequency
4	123.1MHz	8kHz for A3X or A3E (ICAO SARPS Annex 10 Volume 3 to ICAO Convention) (Rec. ITU-R SM.1138-3)	The Peak Effective Radiated Power (PERP) shall at no time be less than 50 mW. (ICAO SARPS Annex 10 Volume to ICAO Convention)	Auxiliary to 121.5 MHz, for use by stations of the Aeronautical Mobile service and by other mobile and land stations engaged in coordinated SAR operations.
4	242.95- 243.05 MHz		RR5.111 applies RR5.256 applies	Survival craft stations and equipment used for survival purposes. SAR operations concerning manned space vehicles survival craft stations and equipment used for survival purposes on 243 MHz.
5	406- 406.1MHz	6kHz (20dBc)	Maximum e.i.r.p.: 15dBW (Rec. ITU-R M. 633-4, Cospas-Sarsat Doc C/S T.001)	COSPAS – SARSAT: Emergency Position Indicating Radio Beacon (EPIRB) Low power satellite EPIRBs (distress and safety purposes)

4. FREQUENCIES THAT SUPPORT OPERATIONS INTENDED FOR SAFETY OF LIFE

No.	Frequency or Frequency Range	ITU Reference	Primary usage
1	1 087.7 – 1 092.3 MHz	(Rep. ITU-R M.2413-0)	Automatic Dependent Surveillance-Broadcast (ADS-B). Res. 425 (WRC-19) applies (global flight tracking for civil aviation)
2	1 164 – 1 214 MHz	(Rec. ITU-R M.1787-3	Galileo
5	1 190.3 – 1 213.8 MHz	(Rec. ITU-R M.1787-3)	GLONASS
6	1 237.8 – 1 253.8 MHz	(Rec. ITU-R M.1787-3)	GLONASS
7	1 215.6 – 1 239.6 MHz	(Rec. ITU-R M.1787-3)	GPS
8	1 260 – 1 300 MHz	ITU-R M.1787-3	Galileo
9	1 559.42 – 1 591.42 MHz	(Rec. ITU-R M.1787-3)	Galileo
10	1 592.9 – 1 610.5 MHz	(Rec. ITU-R M.1787-3)	GLONASS
11	1 563.42 – 1 587.42 MHz	(Rec. ITU-R M.1787-3)	GPS

Annex F: Spectrum Bands Identified for IMT

The following bands are identified for IMT in all or some African countries. The identification does not ***necessarily*** preclude the use of these frequency bands by any application of the services to compatible to IMT:

No.	Band	RR Footnote	Resolution	Region
1	450 - 470 MHz[13]	5.286AA	Res. 224 (Rev. WRC-23)	All Regions
2	694 - 790 MHz[14]	5.317A	Res. 224 (Rev. WRC-23) Res. 760 (Rev. WRC-23) Res. 749 (Rev. WRC-23)	Regions 1 and 2. Starts at 698 MHz in Region 2
3	790 - 960 MHz	5.317A	Res. 224 (Rev. WRC-23) Res. 760 (Rev. WRC-23) Res. 749 (Rev. WRC-23)	All Regions
4	1 427 - 1 452 MHz	5.341A	Res. 223 (Rev. WRC-23)	Region 1
5	1 452 - 1 492 MHz	5.346	Res. 223 (Rev. WRC-23) Res. 761 (Rev. WRC-19)	In 44 African countries[15]
6	1 492 - 1 518 MHz	5.341A	Res. 223 (Rev. WRC-23)	Region 1
7	1 710 - 1 885 MHz	5.384A	Res. 223 (Rev. WRC-23)	All Regions
8	1 885 - 2 025 MHz	5.388/5.388A[16]	Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-07)[6]	All Regions
9	2 010 - 2 025 MHz	5.388A[11]	Res. 221 (Rev. WRC-07)[6]	Regions 1 and 3
10	2 110 - 2 200 MHz	5.388/5.388A[11]	Res. 212 (Rev. WRC-23) Res. 223 (Rev. WRC-23) Res. 221 (Rev. WRC-23)[6]	All Regions
11	2 300 - 2 400 MHz	5.384A	Res. 223 (Rev. WRC-23)	All Regions
12	2 500 - 2 690 MHz	5.384A	Res. 223 (Rev. WRC-23)	All Regions
13	3 300 - 3 400 MHz	5.429B	Res. 223 (Rev. WRC-23)	In 48 African countries[17]
14	3 400 - 3 600 MHz	5.430A	-	All Regions
15	3 600 – 3 700 MHz	5.433B, 5.434B		In 50 African countries[18]
16	3 700 – 3 800 MHz	5.434B		In 44 African countries[19]
17	4 800 - 4 990 MHz	5.441B	Res. 223 (Rev. WRC-23)	In 30 African countries[20]
18	6 425 – 7 125 MHz	5.457E		In Region 1, and 7 025 – 7 125 MHz in Region 3
19	24.25 - 27.5 GHz	5.532AB	Res. 242 (WRC-23)	All Regions
20	37 - 43.5 GHz	5.550B	Res. 243 (WRC-23)	All Regions

[13] This band is also identified for PPDR. See Annex E.

[14] The bands 698-703/753-758 MHz and 733-736/788-791MHz are also identified for PPDR. See Annex E.

[15] In **Algeria**, **Angola**, Saudi Arabia, Bahrain, **Benin**, **Botswana**, **Burkina Faso**, **Burundi**, **Cameroon**, **Central African Republic**, **Congo (Rep. of the), Côte d'Ivoire**, **Djibouti**, **Egypt**, United Arab Emirates, **Eswatini**, **Gabon**, **Gambia**, **Ghana**, **Guinea**, Iraq, Jordan, **Kenya**, Kuwait, **Lesotho**, Lebanon, **Liberia**, **Madagascar**, **Malawi**, **Mali**, **Morocco**, **Mauritius**, **Mauritania**, **Mozambique**, **Namibia**, **Niger**, **Nigeria**, Oman, **Uganda**, Palestine**, Qatar, **Dem. Rep. of the Congo**, **Rwanda**, **Senegal**, **Seychelles**, **Sudan**, **South Sudan**, **South Africa**, **Tanzania**, **Chad**, **Togo**, **Tunisia**, **Zambia**, and **Zimbabwe**.

[16] This footnote permits use of the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz for high altitude platform stations as base stations to provide International Mobile Telecommunications 2000 (IMT 2000), in accordance with Resolution **221 (Rev.WRC 03)**. In Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz can be used for same.

[17] In Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe

[18] In Angola, Botswana, Guinea, Lesotho, Malawi and South Sudan, and in Algeria, Benin, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, Eswatini, Gabon, Gambia, Ghana, Guinea, Kenya, Liberia, Libya, Madagascar, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe

[19] In Algeria, Benin, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, Eswatini, Gabon, Gambia, Ghana, Guinea, Kenya, Liberia, Libya, Madagascar, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe

[20] In **Angola**, Armenia, Azerbaijan, **Benin**, **Botswana**, Brazil, **Burkina Faso**, **Burundi**, Cambodia, Cabo Verde, **Cameroon**, China, Congo (Rep. of the), **Côte d'Ivoire**, **Djibouti**, **Eswatini**, Russian Federation,Gabon, Ghana, , **Guinea**, Iran (Islamic Republic of), Kazakhstan, , Lao P.D.R., **Lesotho**, **Liberia**, Madagascar, **Malawi**, Mali, , Mongolia, , Niger, Namibia, **Uganda**, Uzbekistan, **the Dem. Rep. of the Congo**, Kyrgyzstan, the Dem. People's Rep. of Korea, South **Sudan**, **South Africa**, Chad, , **Togo**, Viet Nam, **Zambia** and **Zimbabwe**

21	45.5 - 47 GHz	5.553A	Res. 244 (WRC-23)	In 39 African countries[21]
22	47.2 - 48.2 GHz	5.553B	Res. 243 (WRC-23)	In 52 African countries[22] and Region 2
23	66 - 71 GHz	5.559AA	Res. 241 (WRC-23)	All Regions

[21] 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**

[22] 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**

Annex G: List of WRC Resolutions, ITU-R Recommendations and ITU-R Reports referenced in the Table of Frequency Allocations

Part A: WRC Resolutions

Note: The text of the resolutions can be found at https://www.itu.int/pub/R-REG-RR. They are part of the edition 2020 of the Radio Regulations.

Number	Title
Res. 75 (Rev.WRC-12)	Development of the technical basis for determining the coordination area for coordination of a receiving earth station in the space research service (deep space) with transmitting stations of high-density applications in the fixed service in the 31.8-32.3 GHz and 37-38 GHz bands
Res. 122 (Rev.WRC-19)	Use of the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by high-altitude platform stations in the fixed service
Res. 143 (Rev.WRC-19)	Guidelines for the implementation of high-density applications in the fixed-satellite service in frequency bands identified for these applications
Res. 155 (Rev.WRC-19)	Regulatory provisions related to earth stations on board unmanned aircraft which operate with geostationary-satellite networks in the fixed-satellite service in certain frequency bands not subject to a Plan of Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems in non-segregated airspaces*
Res. 156 (WRC-15)	Use of the frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service
Res. 169 (WRC-19)	Use of the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service
Res. 172 (WRC-19)	Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)
Res. 212 (Rev.WRC-19)	Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz
Res. 221 (Rev.WRC-07)	Use of high-altitude platform stations providing IMT in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2
Res. 222 (Rev.WRC-12)	Use of the frequency bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service
Res. 223 (Rev.WRC-19)	Additional frequency bands identified for International Mobile Telecommunications
Res. 224 (Rev.WRC-19)	Frequency bands for the terrestrial component of International Mobile Telecommunications below 1 GHz
Res. 229 (Rev.WRC-19)	Use of the frequency bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service for the implementation of wireless access systems including radio local area networks
Res. 241 (WRC-19)	Use of the frequency band 66-71 GHz for International Mobile

	Telecommunications and coexistence with other applications of the mobile service
Res. 242 (WRC-19	Terrestrial component of International Mobile Telecommunications in the frequency band 24.25-27.5 GHz
Res. 243 (WRC-19)	Terrestrial component of International Mobile Telecommunications in the frequency bands 37-43.5 GHz and 47.2-48.2 GHz
Res. 246 (WRC-19)	Studies to consider possible allocation of the frequency band 3 600-3 800 MHz to the mobile, except aeronautical mobile, service on a primary basis within Region 1
Res. 646 (Rev.WRC-19)	Public protection and disaster relief
Res. 760 (Rev.WRC-19)	Provisions relating to the use of the frequency band 694-790 MHz in Region 1 by the mobile, except aeronautical mobile, service and by other services
Res. 761 (Rev.WRC-19)	Coexistence of International Mobile Telecommunications and the broadcasting-satellite service (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3
Res. 902	Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the uplink bands 5 925-6 425 MHz and 14-14.5 GHz

Part B: ITU-R Recommendations

Note: The text of the ITU-R recommendations can be found at https://www.itu.int/pub/R-REC

Number	**Title**
Rec. ITU-R F.384	Radio-frequency channel arrangements for medium- and high- capacity digital fixed wireless systems operating in the 6 425-7 125 MHz band
Rec. ITU-R F.385	Radio-frequency channel arrangements for fixed wireless systems operating in the 7 110-7 900 MHz band
Rec. ITU-R F.386	Radio-frequency channel arrangements for fixed wireless systems operating in the 8 GHz (7 725 to 8 500 MHz) band
Rec. ITU-R F.497	Radio-frequency channel arrangements for fixed wireless systems operating in the 13 GHz (12.75-13.25 GHz) frequency band
Rec. ITU-R F.595	Radio-frequency channel arrangements for fixed wireless systems operating in the 17.7-19.7 GHz frequency band
Rec. ITU-R F.636	Radio-frequency channel arrangements for fixed wireless systems operating in the 14.4-15.35 GHz band
Rec. ITU-R F.637	Radio-frequency channel arrangements for fixed wireless systems operating in the 21.2-23.6 GHz band
Rec. ITU-R F.748	Radio-frequency arrangements for systems of the fixed service operating in the 25, 26 and 28 GHz bands
Rec. ITU-R F.749	Radio-frequency arrangements for systems of the fixed service operating in sub-bands in the 36-40.5 GHz band
Rec. ITU-R F.1098	Radio-frequency channel arrangements for fixed wireless systems in the 1 900-2 300 MHz band
Rec. ITU-R F.1520	Radio-frequency arrangements for systems in the fixed service operating in the band 31.8-33.4 GHz
Rec. ITU-R F.1568	Radio-frequency block arrangements for fixed wireless access systems in the range 10.15-10.3/10.5-10.65 GHz
Rec. ITU-R F.2006	Radio-frequency channel and block arrangements for fixed wireless systems operating in the 71-76 and 81-86 GHz bands

Rec. ITU-R M.489	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz
Rec. ITU-R M.633	Transmission characteristics of a satellite emergency position-indicating radio beacon (satellite EPIRB) system operating through a satellite system in the 406 MHz band
Rec. ITU R M.1036	Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications (IMT) in the bands identified for IMT in the Radio Regulations
Rec. ITU-R M.1184	Technical characteristics of mobile satellite systems in the frequency bands below 3 GHz for use in developing criteria for sharing between the mobile-satellite service and other services
Rec. ITU-R M.1452	Millimetre wave vehicular collision avoidance radars and radiocommunication systems for intelligent transport system applications
Rec. ITU-R M.1643	Technical and operational requirements for aircraft earth stations of aeronautical mobile-satellite service including those using fixed-satellite service network transponders in the band 14-14.5 GHz (Earth-to-space)
Rec. ITU-R M.1787	Description of systems and networks in the radionavigation-satellite service (space-to-Earth and space-to-space) and technical characteristics of transmitting space stations operating in the bands 1 164-1 215 MHz,1 215-1 300 MHz and 1 559-1 610 MHz
Rec. ITU-R M.2003	Multiple gigabit wireless systems in frequencies around 60 GHz
Rec. ITU-R M.2009	Radio interface standards for use by public protection and disaster relief operations in accordance with Resolution 646 (Rev.WRC-15)
Rec. ITU R M.2015	Frequency arrangements for public protection and disaster relief radiocommunication systems in accordance with Resolution 646 (Rev.WRC-15)
Rec. ITU-R RS.1346	Sharing between the meteorological aids service and medical implant communication systems (MICS) operating in the mobile service in the frequency band 401-406 MHz
Rec. ITU-R SM.1755	Characteristics of ultra-wideband technology
Rec. ITU-R SM.1756	Framework for the introduction of devices using ultra-wideband technology
Rec. ITU-R SM.1757	Impact of devices using ultra-wideband technology on systems operating within radiocommunication services
Rec. ITU-R SM.1896	Frequency ranges for global or regional harmonization of short-range devices

Part C: ITU-R Reports

Note: The text of the reports can be found at https://www.itu.int/pub/R-REP

Number	**Title**
Rep. ITU-R M.2227	Use of multiple gigabit wireless systems in frequencies around 60 GHz
Rep. ITU-R M.2369	Use of non-geostationary orbit mobile satellite systems to enhance maritime safety
Rep. ITU-R M.2413	Reception of automatic dependent surveillance broadcast via satellite and compatibility studies with incumbent systems in the frequency band 1 087.7-1 092.3 MHz

Rep. ITU-R M.2481	In-band and adjacent band coexistence and compatibility studies between IMT systems in 3 300-3 400 MHz and radiolocation systems in 3 100-3 400 MHz
Rep. ITU-R SM.2153	Technical and operating parameters and spectrum use for short-range radiocommunication devices

ABOUT AfriSAP DEVELOPMENT

Development: AfriSAP was developed by an ATU Task Group on AfriSAP. This group was led by the following:

Role	Name (Country)
Chair – Task Group	Stella BANYENZA (Tanzania representing EACO)
Rapporteur	Entsar MAHMOUD (Sudan representing North Africa)
Rapporteur	Martial DHOSSA (Togo and representing ECOWAS)
Rapporteur	Armand MFOMO (Gabon representing ECCAS)
Rapporteur	Mercy NDEMA (Malawi representing SADC)

African Telecommunications Union

CA Centre, Waiyaki Way

P. O Box 35282 – 00200 Nairobi, Kenya

Tel: +254 722 203132

Email: sg@atuuat.africa

Website: www.atuuat.africa