Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 635 25 May Mei 2018 No. 41650

PART 1 OF 8

ISSN 1682-5843

9 771682 584003 41650

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NOTICE 266 OF 2018

PURSUANT TO SECTION 34 (2) AND 34 (5) OF THE ELECTRONIC COMMUNICATIONS ACT 2005, (ACT NO. 36 OF 2005)

HEREBY ISSUES A NOTICE REGARDING THE FINAL NATIONAL RADIO FREQUENCY PLAN 2018.

1. The Independent Communications Authority of South Africa ("the Authority"), in terms of section 34 (2) and (5) of the Electronic Communications Act (Act No. 36 of 2005, as amended) hereby publishes a notice of the **"National Radio Frequency Plan 2018".**

RUBBEN MOHLALOGA

CHAIRPERSON

NATIONAL RADIO FREQUENCY PLAN 2018
(NRFP-18)

8.3 kHz – 3000 GHz

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

Table of Contents

1 TERMS, DEFINITIONS AND ACRONYMS 1-5

1.1 Terms and definitions 1-5

1.2 Acronyms 1-13

2 PREAMBLE 2-17

2.1 Legislative Framework 2-17

2.2 ITU-R Radio Regions 2-18

2.3 Structure of the Table of Frequency Allocations 2-19

2.3.1 Column 1 - ITU Region 1 Allocations and footnotes 2-19

2.3.2 Column 2 – South African allocations and footnotes 2-19

2.3.3 Column 3 – Typical Applications 2-20

2.3.4 Column 4 – Notes and comments 2-20

2.3.5 ITU-R Region 1 and National Footnotes 2-20

2.3.6 List of frequency bands used for Maritime services 2-20

2.3.7 Frequency and wavelength bands 2-20

2.5 Contact details 2-22

3 Table of frequency allocations 3-23

4 Radio Astronomy 4-200

5 National Footnotes to the Table of Frequency Allocations 5-201

6 ITU Radio Regulations Footnotes 6-208

7 List of frequency bands used for Maritime services 7-262

1 TERMS, DEFINITIONS AND ACRONYMS

1.1 Terms and definitions

These definitions are for the purposes of the NRFP and do not necessarily apply elsewhere.

adaptive system:	A radiocommunication system which varies its radio characteristics according to channel quality.
administration	Any governmental department or service responsible for discharging the obligations undertaken in the Constitution of the International Telecommunication Union, in the Convention of the International Telecommunication Union and in the Administrative Regulations (CS 1002).
allocation (of a frequency band)	Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency band concerned.
allotment (of a radio frequency or radio frequency channel)	Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions.
assignment (of a radio frequency or radio frequency channel)	Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions.
aeronautical earth station:	An *earth station* in the *fixed-satellite service*, or, in some cases, in the *aeronautical mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *aeronautical mobile-satellite service*.
*aeronautical mobile (OR)** service:*	An *aeronautical mobile service* intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.
aeronautical mobile (R) service:*	An *aeronautical mobile service* reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes.
aeronautical mobile service:	A *mobile service* between *aeronautical stations* and *aircraft stations*, or between *aircraft stations*, in which *survival craft stations* may participate; *emergency position-indicating radiobeacon stations* may also participate in this service on designated distress and emergency frequencies.
*aeronautical mobile-satellite (OR)** service:*	An *aeronautical mobile-satellite service* intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes.
aeronautical mobile-satellite (R) service:*	An *aeronautical mobile-satellite service* reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.
aeronautical mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on board aircraft; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
aeronautical radionavigation service:	A *radionavigation service* intended for the benefit and for the safe operation of aircraft.

** (OR): off-route.

* (R): route.

aeronautical radionavigation-satellite service:	A *radionavigation-satellite service* in which *earth stations* are located on board aircraft.
aeronautical station:	A *land station* in the *aeronautical mobile service*. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.
aircraft earth station:	A *mobile earth station* in the *aeronautical mobile-satellite service* located on board an aircraft.
aircraft station:	A *mobile station* in the *aeronautical mobile service*, other than a *survival craft station*, located on board an aircraft.
amateur service:	A *radiocommunication service* for the purpose of self-training, intercommunication and technical investigations carried out by amateurs; that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.
amateur station:	A *station* in the *amateur service.*
amateur-satellite service:	A *radiocommunication service* using *space stations* on earth *satellites* for the same purposes as those of the *amateur service*.
base earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *land mobile-satellite service,* located at a specified fixed point or within a specified area on land to provide a *feeder link* for the *land mobile-satellite service*.
base station:	A *land station* in the *land mobile service*.
broadcasting service:	A *radiocommunication service* in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, *television* transmissions or other types of transmission (CS).
broadcasting station:	A *station* in the *broadcasting service*.
broadcasting-satellite service:	A *radiocommunication service* in which signals transmitted or retransmitted by *space stations* are intended for direct reception by the general public. In the broadcasting-satellite service, the term "direct reception" shall encompass both *individual reception* and *community reception*.
coast earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *maritime mobile-satellite service*, located at a specified fixed point on land to provide a *feeder link* for the *maritime mobile-satellite service*.
coast station:	A *land station* in the *maritime mobile service*.
Coordinated Universal Time (UTC):	Time scale, based on the second (SI), as described in Resolution 655 (WRC-15). (WRC-15). For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT.
Earth exploration-satellite service:	A *radiocommunication service* between *earth stations* and one or more *space stations*, which may include links between *space stations*, in which: – information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from *active sensors* or *passive sensors* on Earth *satellites*; – similar information is collected from airborne or Earth-based platforms; – such information may be distributed to earth stations within the system concerned; – platform interrogation may be included. This service may also include *feeder links* necessary for its operation.

earth station:	A *station* located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication: – with one or more *space stations*; or – with one or more *stations* of the same kind by means of one or more reflecting *satellites* or other objects in space.
emergency position-indicating radiobeacon station:	A *station* in the *mobile service* the *emissions* of which are intended to facilitate search and rescue operations.
experimental station:	A *station* utilizing *radio waves* in experiments with a view to the development of science or technique. This definition does not include *amateur stations*.
facsimile	A form of telegraphy for the transmission of fixed images, with or without half-tones, with a view to their reproduction in a permanent form.
feeder link:	A radio link from an *earth station* at a given location to a *space station*, or vice versa, conveying information for a *space radiocommunication service* other than for the *fixed-satellite service*. The given location may be at a specified fixed point, or at any fixed point within specified areas.
fixed service:	A *radiocommunication service* between specified fixed points.
fixed station:	A *station* in the *fixed service*.
fixed-satellite service:	A *radiocommunication service* between *earth stations* at given positions, when one or more *satellites* are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases, this service includes satellite-to-satellite links, which may also be operated in the *inter-satellite service*; the fixed-satellite service may also include *feeder links* for other *space radiocommunication services*.
frequency-shift telegraphy	Telegraphy by frequency modulation in which the telegraph signal shifts the frequency of the carrier between predetermined values.
high altitude platform station:	A station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.
industrial, scientific and medical (ISM) applications (of radio frequency energy)*:*	Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of *telecommunications*.
instrument landing system (ILS):	A *radionavigation* system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.
instrument landing system glide path:	A system of vertical guidance embodied in the *instrument landing system* which indicates the vertical deviation of the aircraft from its optimum path of descent.
instrument landing system localizer:	A system of horizontal guidance embodied in the *instrument landing system* which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway.
inter-satellite service:	A *radiocommunication service* providing links between artificial *satellites*.
land earth station:	An *earth station* in the *fixed-satellite service* or, in some cases, in the *mobile-satellite service,* located at a specified fixed point or within a specified area on land to provide a *feeder link* for the *mobile-satellite service*.
land mobile earth station:	A *mobile earth station* in the *land mobile-satellite service* capable of surface movement within the geographical limits of a country or continent.

land mobile service:	A *mobile service* between *base stations* and *land mobile stations*, or between *land mobile stations*.
land mobile station:	A *mobile station* in the *land mobile service* capable of surface movement within the geographical limits of a country or continent.
land mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on land.
land station:	A *station* in the *mobile service* not intended to be used while in motion.
maritime mobile service:	A *mobile service* between *coast stations* and *ship stations*, or between *ship stations*, or between associated *on-board communication stations*; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
maritime mobile-satellite service:	A *mobile-satellite service* in which *mobile earth stations* are located on board ships; *survival craft stations* and *emergency position-indicating radiobeacon stations* may also participate in this service.
maritime radionavigation service:	A *radionavigation service* intended for the benefit and for the safe operation of ships.
maritime radionavigation-satellite service:	A *radionavigation-satellite service* in which *earth stations* are located on board ships.
marker beacon:	A transmitter in the *aeronautical radionavigation service* which radiates vertically a distinctive pattern for providing position information to aircraft.
meteorological aids service:	A *radiocommunication service* used for meteorological, including hydrological, observations and exploration.
meteorological aids land station: meteorological aids mobile station: meteorological-satellite service: meteorological aids land station: meteorological aids mobile station: meteorological-satellite service:	A station in the meteorological aids service not intended to be used while in motion.
meteorological aids mobile station:	A station in the meteorological aids service intended to be used while in motion or during halts at unspecified points.
meteorological-satellite service:	An *earth exploration-satellite service* for meteorological purposes.
mobile earth station:	An *earth station* in the *mobile-satellite service* intended to be used while in motion or during halts at unspecified points.
mobile service:	A *radiocommunication service* between *mobile* and *land stations*, or between *mobile stations* (CV).
mobile station:	A *station* in the *mobile service* intended to be used while in motion or during halts at unspecified points.
mobile-satellite service:	A *radiocommunication service:* – between *mobile earth stations* and one or more *space stations*, or between *space stations* used by this service; or – between *mobile earth stations* by means of one or more *space stations*.

	This service may also include *feeder links* necessary for its operation.
multi-satellite link:	A radio link between a transmitting *earth station* and a receiving *earth station* through two or more *satellites*, without any intermediate *earth station*. A multi-satellite link comprises one up-link, one or more satellite-to-satellite links and one down-link.
on-board communication station:	A low-powered *mobile station* in the *maritime mobile service* intended for use for internal communications on board a ship, or between a ship and its lifeboats and life-rafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions.
port operations service:	A *maritime mobile service* in or near a port, between *coast stations* and *ship stations*, or between *ship stations*, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages which are of a *public correspondence* nature shall be excluded from this service.
port station:	A *coast station* in the *port operations service*.
primary radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals reflected from the position to be determined.
public correspondence	Any *telecommunication* which the offices and *stations* must, by reason of their being at the disposal of the public, accept for transmission (CS).
radar beacon (racon):	A transmitter-receiver associated with a fixed navigational mark which, when triggered by a *radar,* automatically returns a distinctive signal which can appear on the display of the triggering *radar,* providing range, bearing and identification information.
radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined.
radio	A general term applied to the use of radio waves.
radio altimeter:	*Radionavigation* equipment, on board an aircraft or *spacecraft,* used to determine the height of the aircraft or the *spacecraft* above the Earth's surface or another surface.
radio astronomy	Astronomy based on the reception of *radio waves* of cosmic origin.
radio astronomy service:	A service involving the use of *radio astronomy*.
radio astronomy station:	A *station* in the *radio astronomy service*.
radio astronomy:	Astronomy based on the reception of *radio waves* of cosmic origin.
radio direction-finding station:	A *radiodetermination station* using *radio direction-finding.*
radio direction-finding:	*Radiodetermination* using the reception of *radio waves* for the purpose of determining the direction of a *station* or object.
radiobeacon station:	A *station* in the *radionavigation service* the *emissions* of which are intended to enable a *mobile station* to determine its bearing or direction in relation to the radiobeacon station.
radiocommunication	*Telecommunication* by means of *radio waves* (CS) (CV).
radiocommunication service:	A service as defined in this Section involving the transmission, *emission* and/or reception of *radio waves* for specific *telecommunication* purposes. In these Regulations, unless otherwise stated, any radiocommunication service relates to *terrestrial radiocommunication*.

radiodetermination:	The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of *radio waves*.
radiodetermination service:	A *radiocommunication service* for the purpose of *radiodetermination*.
radiodetermination Station:	A *station* in the *radiodetermination service*.
radiodetermination-satellite service:	A *radiocommunication service* for the purpose of *radiodetermination* involving the use of one or more *space stations*. This service may also include *feeder links* necessary for its own operation.
radio direction-finding	*Radiodetermination* using the reception of *radio waves* for the purpose of determining the direction of a *station* or object.
radiolocation land station:	A *station* in the *radiolocation service* not intended to be used while in motion.
radiolocation mobile station:	A *station* in the *radiolocation service* intended to be used while in motion or during halts at unspecified points.
radiolocation:	*Radiodetermination* used for purposes other than those of *radionavigation*.
radiolocation service:	A *radiodetermination service* for the purpose of *radiolocation*.
radiolocation-satellite service:	A *radiodetermination-satellite service* used for the purpose of *radiolocation*. This service may also include the *feeder links* necessary for its operation.
radionavigation	Radiodetermination used for the purposes of navigation, including obstruction warning.
radionavigation land station:	A *station* in the *radionavigation service* not intended to be used while in motion.
radionavigation mobile station:	A *station* in the *radionavigation service* intended to be used while in motion or during halts at unspecified points.
radionavigation service:	A *radiodetermination service* for the purpose of *radionavigation*.
radionavigation:	*Radiodetermination* used for the purposes of navigation, including obstruction warning.
radionavigation-satellite service:	A *radiodetermination-satellite service* used for the purpose of *radionavigation*. This service may also include *feeder links* necessary for its operation.
radiosonde:	An automatic radio transmitter in the *meteorological aids service* usually carried on an aircraft, free balloon, kite or parachute, and which transmits meteorological data.
radiotelegram	A telegram, originating in or intended for a mobile station or a mobile earth station transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service.
radiotelex call	A telex call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or the mobile-satellite service.
radio waves or hertzian waves	Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide
safety service:	Any *radiocommunication service* used permanently or temporarily for the safeguarding of human life and property.
satellite emergency position-indicating radiobeacon:	An *earth station* in the *mobile-satellite service* the *emissions* of which are intended to facilitate search and rescue operations.
satellite link:	A radio link between a transmitting *earth station* and a receiving *earth station* through one *satellite*.

	A satellite link comprises one up-link and one down-link.
satellite network:	A *satellite system* or a part of a *satellite system*, consisting of only one *satellite* and the cooperating *earth stations*.
satellite system:	A *space system* using one or more artificial earth *satellites*.
secondary radar:	A *radiodetermination* system based on the comparison of reference signals with radio signals retransmitted from the position to be determined.
ship earth station:	A *mobile earth station* in the *maritime mobile-satellite service* located on board ship.
ship movement service:	A *safety service* in the *maritime mobile service* other than a *port operations service*, between *coast stations* and *ship stations*, or between *ship stations*, in which messages are restricted to those relating to the movement of ships. Messages which are of a *public correspondence* nature shall be excluded from this service.
ship station:	A *mobile station* in the *maritime mobile service* located on board a vessel which is not permanently moored, other than a *survival craft station*.
ship's emergency transmitter:	A ship's transmitter to be used exclusively on a distress frequency for distress, urgency or safety purposes.
space operation service:	A *radiocommunication service* concerned exclusively with the operation of *spacecraft*, in particular *space tracking, space telemetry* and *space telecommand*. These functions will normally be provided within the service in which the *space station* is operating.
space radiocommunication	Any *radiocommunication* involving the use of one or more *space stations* or the use of one or more *reflecting satellites* or other objects in space.
space research service:	A *radiocommunication service* in which *spacecraft* or other objects in space are used for scientific or technological research purposes.
space station:	A *station* located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.
space system:	Any group of cooperating *earth stations* and/or *space stations* employing *space radiocommunication* for specific purposes.
special service:	A *radiocommunication service*, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to *public correspondence*.
standard frequency and time signal service:	A *radiocommunication service* for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception.
standard frequency and time signal station:	A *station* in the *standard frequency and time signal service.*
standard frequency and time signal-satellite service:	A *radiocommunication service* using *space stations* on earth *satellites* for the same purposes as those of the *standard frequency and time signal service*. This service may also include *feeder links* necessary for its operation.
station:	One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a *radiocommunication service*, or the *radio astronomy service*. Each station shall be classified by the service in which it operates permanently or temporarily.
survival craft station:	A *mobile station* in the *maritime mobile service* or the *aeronautical mobile service* intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment.

telecommunication	Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems (CS).
telegraphy	A form of telecommunication in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use (CS 1016).
telephony	A form of telecommunication primarily intended for the exchange of information in the form of speech (CS 1017).
telegram	Written matter intended to be transmitted by telegraphy for delivery to the addressee. This term also includes radiotelegrams unless otherwise specified (CS). In this definition the term telegraphy has the same general meaning as defined in the Convention.
terrestrial radiocommunication	Any radiocommunication other than space radiocommunication or radio astronomy
terrestrial station:	A *station* effecting *terrestrial radiocommunication*. In these Regulations, unless otherwise stated, any *station* is a terrestrial station.

1.2 Acronyms

AAA	Astronomy Advantage Area
AGAA	Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007)
ASDE	Airports Surface Detection Equipment
ATC/CGC	Auxiliary Terrestrial Component /Complimentary Ground Component
BFWA	Broadband Fixed Wireless Access
BSS	Broadcast Satellite Service
BTX	Base Transmit
C-band	Frequency range between about 4 and 6 GHz
CT2	Second generation cordless telephones operating to specification MPT1334.
dBW	Decibels relative to one Watt of power.
DECT	Digital European Cordless Telecommunication system. ERC Decision ERC/DEC/(94)03 refers.
DF	Duplex Frequency
DSC	Digital Selective Calling
DSSS	Direct Sequence Spread Spectrum
ECA	Electronic Communications Act No 36 of 2005
ENG	Electronic News Gathering
ENG/OB	Electronic News Gathering / Outside Broadcasting
EPIRB	Emergency Position Indicating Radio Beacon
FDDA	Field Disturbance and Doppler Apparatus
FM	Frequency Modulation
FSS	Fixed Satellite Service
FWA	Fixed Wireless Access

GLONASS	Global Navigation Satellite System
GMDSS	Global Maritime Distress and Safety System.
GPRS	General Packet Radio Service
GPS	Global Positioning System - a satellite radio navigation system.
GSM	Global System for Mobile communications. Originally Groupe Spécial Mobile. See ERC Decision ERC/DEC/(94)01.
GSM 900	GSM using 900 MHz frequencies
GSM-R	GSM Railways
GSO	Geostationary Orbit
HAP	High Altitude Platform
HDFS	High Density Fixed Service
HDFSS	High Density Fixed Satellite Service
HF	High Frequency (3 to 30 MHz)
HDFS	Hadoop Distributed File System
ICAO	International Civil Aviation Organisation
ILS	Instrument Landing System-aeronautical radio navigation system.
IMO	International Maritime Organisation
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical. The use of radio for non-communication purposes such as microwave heating etc.
ITU	International Telecommunication Union.
Ka-band	Part of the frequency band between about 18 and 30 GHz
Ku-band	Part of the frequency band between about 12 and 18 GHz
L-band	Frequency band around 1.5 GHz

LEO	Low Earth Orbit satellite
LF	Low Frequency (30 to 300 kHz)
LMDS	Local Multipoint Distribution Services
LPVS	Low Power Video Surveillance
LTE	Long Term Evolution
MF	Medium Frequency (300 to 3000 kHz)
MMS	Maritime Mobile Service
MPT	Mobile Public Trunking
MSS	Mobile Satellite Service
NGSO	Non-geostationary Satellite Orbit
OB	Outside Broadcast.
PAMR	Public Access Mobile Radio.
PMR	Private Mobile Radio.
PPDR	Public Protection and Disaster Relief
PSTN	Public Switched Telephone Network
RFID	Radio Frequency Identification systems
RLAN	Radio Local Area Network
RNSS	Radio Navigation Satellite Service
RR	Radio Regulation of the International Telecommunication Union
RTT	Road Transport Telematics
SAB	Services Ancillary to Broadcasting
SABRE	South African Band Replanning Exercise
SADC	Southern African Development Community
SAP	Services Ancillary to Programme-making

S-DAB	Satellite Digital Audio Broadcasting
SHF	Super High Frequency (3 to 30 GHz)
SKA	Square Kilometre Array
SNG	Satellite News Gathering
SRDs	Short Range Devices, formerly referred to as Low Power Devices (LPDs).
T-DAB	Terrestrial Digital Audio Broadcasting.
TDD	Time Division Duplex
UHF	Ultra High Frequency (300 to 3000 MHz)
UAV	Unmanned Aerial Vehicle
VHF	Very High Frequency (30 to 300 MHz)
VLF	Very Low Frequency (3 to 30 kHz)
VOR	Very high frequency Omnidirectional Range (aeronautical radionavigation system).
VSAT	Very Small Aperture Terminal
WAS	Wireless Access Services
WARC	World Administrative Radio Conference. The last WARC was held in 1992. WARCs are now superseded by WRCs.
WLAN	Wireless Local Area Network
WRC	World Radiocommunication Conference.

2 PREAMBLE

2.1 Legislative Framework

The Electronic Communications Act, 2005 (Act No. 36 of 2005), herein after referred to as the Act; provides for the control of the radio frequency spectrum.

In carrying out its functions under the Act and the related legislation, the Authority controls, plans, administers and manages the use and licensing of the radio frequency spectrum in terms of section 30(1) of the Act.

This National Radio Frequency Plan 2018 (NRFP-18) has been prepared under Section 34 of the Act.

The NRFP-18 allocates the Radio Frequency Spectrum to Radio Services in the Frequency Bands between 8.3 kHz and 3000 GHz. All frequency assignments must be in accordance national radio frequency plan.

This revised NRFP-18 incorporates the decisions taken by 2015 World Radiocommunication Conferences (WRC-15). The revision reflects the 2016 version of the ITU Radio Regulations edition, including the frequency allocations relevant to Region 1 and its associated footnotes. It also includes updates on the Table of Frequency Allocations extending up to 3000 GHz and South African National Footnotes. The revised NRFP-18 further reflects agreements taken at regional level including that of the African Telecommunication Union (ATU) and the Southern African Development Community (SADC)[1] Frequency Allocation Plan (FAP)[2]. These aforementioned agreements do not supersede any regulations developed by the Authority.

The Authority consulted with the government Department that is responsible for approving the frequency band plan as prescribed in the Electronic Communications Act, to incorporate the radio frequency spectrum allocated by the Minister for use by security services taking into account the Government's current and planned use of radio frequency spectrum, including but not limited to, civil aviation, and aeronautical services and scientific research. This updated version of the NRFP-18 incorporates the outcome of the public consultation as mandated by the EC Act.

A document containing relevant ITU – R Resolutions and Recommendations referred in this document can be found on the Authority's website.

The pattern of radio use is not static as it is continuously evolving to reflect the many changes that are taking place in the radio environment; particularly in the field of technology. Spectrum allocations must reflect these changes and the position set out in this plan is therefore subject to regular reviews.

In view of the above, it is the intention of the Authority to update the NRFP when necessary in order to keep the plan current with due regard given to the current and future usage of the radio frequency spectrum.

The following updates and amendments amongst others have been implemented in NRFP -18:

- National footnotes have been revised.

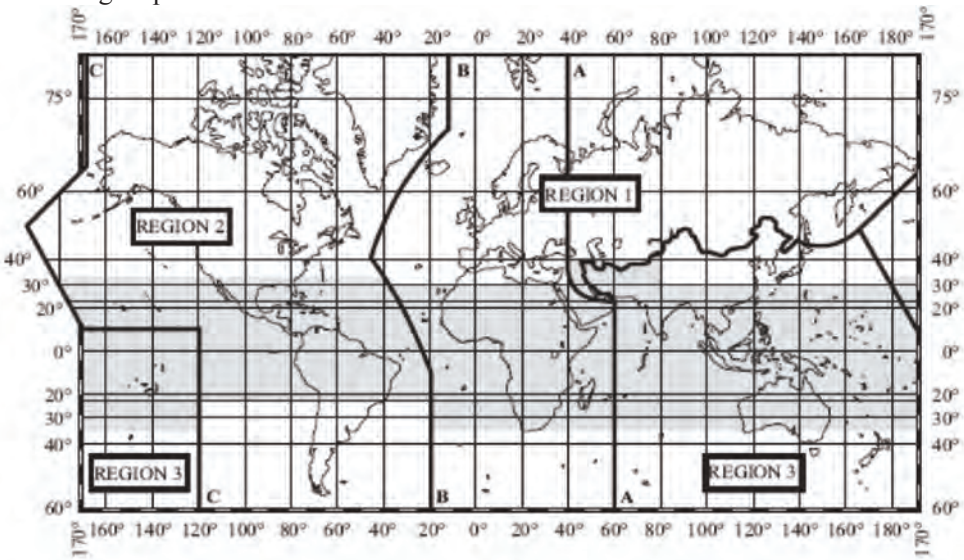
[1] http://www.crasa.org/crasa-publication/cat/18/regulatory-guidelines/

[2] http://www.crasa.org/common_up/crasa-setup/10-11-2016_SADC%20FREQUENCY%20ALLOCATION%20PLAN%202016.pdf

- The resolutions and decisions taken by World Radiocommunication Conferences preceding WRC-15.
- The resolutions and decisions taken by the WRC-15, as ratified by the South Africa (Republic of), have been reflected.
- The Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) covered in a separate chapter in view of the award of the Square Kilometre Array (SKA) to South Africa. The commencement of the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) In terms of section 53 of the Astronomy Geographic Advantage Act. 2007 (Act No. 21 of 2007), the 24 April 2009 has been determined as the date on which the said Act comes into operation.
- The Regulations apply to the Karoo Central Astronomy Advantage Areas declared for the purpose of radio astronomy and related scientific endeavours in terms of sections 9(1) and 9(2) of the Act.
- Incorporated references to the SADC Frequency Allocation Plan (FAP) and SADC Harmonised Guidelines

2.2 ITU-R Radio Regions

For the purposes of allocating frequencies, the ITU has divided the world into three Regions as shown on the following map:



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

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

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

The Republic of South Africa falls under ITU Region 1 and thus aligns its frequency allocations with those specified for ITU Region 1 in the ITU Radio Regulations as required by the Act.

CONTINUES ON PAGE 258 - PART 3

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 635 25 May Mei 2018 No. 41650

PART 3 OF 8

ISSN 1682-5843

9 771682 584003 41650

2.3 Structure of the Table of Frequency Allocations

The Table of Frequency Allocations lists all the allocations in the radio-frequency spectrum in the Republic of South Africa. The structure of the Table, which is outlined below, is similar to that of the International Table of Frequency Allocations as it appears in Article **5** of the ITU Radio Regulations.

The Table of Frequency Allocations covers the frequency range 8.3 kilohertz (kHz) to 3 000 Gigahertz. The table of frequency allocations list for each frequency range the radiocommunication services that are permitted and which ones are currently in use in South Africa. Information is also given on possible future uses or changes in use of particular frequency bands.

2.3.1 Column 1 - ITU Region 1 Allocations and footnotes

This column shows the type of radiocommunications service allocated to the frequency band by ITU. These allocations are defined in the ITU Radio Regulations. Entries in UPPER CASE denote primary services while entries in lower case denote secondary services as defined in the ITU Radio Regulations. Footnotes (e.g., **5.149**) are the footnotes to the Table of Frequency Allocations as detailed in Article **5** of the Radio Regulations.

Values in this column denote the radio-frequency band. Magnitude of frequency units used in the column header are: kHz indicates kilohertz, MHz indicates Megahertz and GHz indicates Gigahertz.
Secondary services are on a non-interference and non-protection basis (NINP) to the primary services[3].
Spectrum assigned on a secondary basis means that the secondary station:

(i) cannot cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;
(ii) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date, however;
(iii) can claim protection from interference from stations of the secondary service(s) to which frequencies may be assigned at a later date.

The frequency band referred to in each allocation is indicated in the left hand top corner of the part of the Table concerned.

The order of listing does not indicate relative priority within each category.
The footnote references are those that appear in Article 5 of the ITU Radio Regulations and are applicable to region 1.

- The footnote references which appear in the bottom of the table reflect the allocated service or services which apply to more than one of the allocated services, or to the whole of the allocation concerned.
- The footnote references which appear to the right of the name of a service are applicable only to that particular service.

2.3.2 Column 2 – South African allocations and footnotes

This column indicates the allocations of radiocommunication service(s) specified for South Africa, based on Article **5** of the ITU Radio Regulations. Names of services are based on the definitions in the ITU Radio Regulations and footnotes relevant to South Africa are included. The allocations highlighted with UPPER-CASE letters correspond to primary status allocations; the allocations with secondary status are written in lower-case.

[3] Article **4.4** of the Radio Regulations: Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.

Values in this column denote the radio-frequency band The magnitude of the frequency units used in the column header are: kilohertz(kHz), Megahertz(MHz) and GHz indicates Gigahertz.
Whilst the South African allocations are broadly aligned with the ITU Region 1 requirements, a number of variations exist. In accordance with Radio Regulations No. **4.4**, such variations are subject to the condition that the associated radio installations do not cause harmful interference to the radio services or communications of other ITU Member States that operate in accordance with the provisions of the Radio Regulations, and that the possibility of harmful interference from such services and communications is accepted.

The column further makes reference to national footnotes (e.g., NF xx) that are indicated as 'NF' and appear in the table of allocation on the same basis as the ITU footnotes.

2.3.3 Column 3 – Typical Applications

This column indicates the current national usage of the frequency band in South Africa and contains allowed applications. Contains the main service, systems and application(s) of this frequency band or a part of it, authorized in South Africa. If the use covers more than one frequency band or concerns only one part of the band, the frequency range is generally indicated.

2.3.4 Column 4 – Notes and comments

This column gives relevant document references as well as other additional information applicable to the frequency band. This column contains information about reference documents and relevant standards as well as other guidelines applicable to the frequency band, e.g., Government Gazette Notices pertinent to specific frequency bands, future requirements in specific bands, and ITU-R Recommendations or Resolutions which require implementation.

2.3.5 ITU-R Region 1 and National Footnotes

South African National Footnotes and ITU-R footnotes applicable to Region 1 are contained in sections 5 and 6 respectively.

2.3.6 List of frequency bands used for Maritime services

The List of frequency bands used for Maritime services is contained in section 7.

2.3.7 Frequency and wavelength bands

The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:

– in kilohertz (kHz), up to and including 3 000 kHz;

– in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;

– in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made. (WRC-15).

Table 1: Frequency and wavelength bands

Band number	Symbols	Frequency Range (lower limit exclusive, upper limit inclusive)	Corresponding metric subdivision
4	VLF	3 to 30 kHz	Myriametric waves
5	LF	30 to300 kHz	Kilometric waves
6	MF	300 to 3 000kHz	Hectometric waves
7	HF	3 to 30 MHz	Decametric waves
8	VHF	30 to300 MHz	Metric waves
9	UHF	300 to 3000 MHz	Decimetric waves
10	SHF	3 to 30 GHz	Centimetric waves
11	EHF	30 to300 GHz	Millimetric waves
12		300 to 3000 GHz	Decimillimetric waves

NOTE 1: "Band N" (N = band number) extends from 0.3×10^N Hz to 3×10^N Hz.
NOTE 2: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9).

Table 2: Standard Frequency Band Nomenclature

Table 2 below illustrates the standard letter-band designations.

Band	Frequency Range (GHz)	Wavelength in Free Space (centimeters)
L band	1 to 2	30.0 to 15.0
S band	2 to 4	15 to 7.5
C band	4 to 8	7.5 to 3.8
X band	8 to 12	3.8 to 2.5
Ku band	12 to 18	2.5 to 1.7
K band	18 to 27	1.7 to 1.1
Ka band	27 to 40	1.1 to 0.75
V band	40 to 75	0.75 to 0.40
W band	75 to 110	0.40 to 0.27
Millimetre band	110 to 300	0.27 to 0.10

2.5 Contact details

Further information on the South African Table of Frequency Allocations and its interpretation can be obtained by contacting:

Independent Communications Authority of South Africa
Pin Mill Farm
164 Katherine Street
Sandton
2146
Phone: +27 11 566 3000
Fax: +27 11 566 3292
URL: http://www.icasa.org.za
E-mail: info@icasa.org.za

3 Table of frequency allocations

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Below 8.3 kHz (Not allocated) 5.53 5.54	**Below 8.3 kHz** (Not allocated) 5.53 5.54		Frequency bands below 8.3 kHz are not allocated in South Africa
8.3-9 kHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	**8.3-9 kHz** METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	Thunderstorm detection stations	
9-11.3 kHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	**9-11.3 kHz** METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	Thunderstorm detection stations Navigational Aids Inductive Loop Systems (9 – 135 kHz)	 Radio Frequency Spectrum Regulations as amended () (GG. No. 38641, 30 March 2015).
11.3-14 kHz RADIONAVIGATION	**11.3-14 kHz** RADIONAVIGATION	Navigational Aids Inductive Loop Systems (9 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	 Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896[4]
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 Inductive Loop Systems (9 – 135 kHz) SRDs – inductive short-	 Radio Frequency Spectrum Régulations as amended (Annexe B)

.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		range radiocommunications (9 kHz-135 kHz)	(GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 2153
19.95-20.05 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	**19.95-20.05 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	Inductive Loop Systems (9 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015) SRDs - see ITU-R Rec.SM. 1896
20.05-70 kHz FIXED MARITIME MOBILE 5.57 5.56 5.58	**20.05-70 kHz** FIXED MARITIME MOBILE 5.57 5.56	Maritime mobile communications Inductive Loop Systems (9 – 135 kHz) RFID (59.75 – 60.25 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No., 38641 March 2015) SRDs - see ITU-R Rec.SM. 1896
70-72 kHz RADIONAVIGATION 5.60	**70-72 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9-135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 386410 March 2015) SRDs - see ITU-R Rec.SM. 1896

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
84-86 kHz RADIONAVIGATION 5.60	**84-86 kHz** RADIONAVIGATION 5.60	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
86-90 kHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION	**86-90 kHz** FIXED MARITIME MOBILE 5.57 RADIONAVIGATION	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015) SRDs - see ITU-R Rec.SM. 1896

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.56	5.56		
90-110 kHz RADIONAVIGATION 5.62 Fixed 5.64	**90-110 kHz** RADIONAVIGATION 5.62 Fixed 5.64	Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications(9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annexe B) (GG. No. 38641, 30 March 2015).
110-112 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	**110-112 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.64	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No. 38641, 30 March 2015).
112-115 kHz RADIONAVIGATION 5.60	**112-115 kHz** RADIONAVIGATION 5.60	Navigational Aids	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
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 Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).) SRDs - see ITU-R Rec.SM. 1896
117.6-126 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**117.6-126 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
126-129 kHz RADIONAVIGATION 5.60	**126-129 kHz** RADIONAVIGATION 5.60	Navigational Aids	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
129-130 kHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	**129-130 kHz** FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	Maritime mobile communications Navigational Aids Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
130-135.7 kHz FIXED MARITIME MOBILE 5.64 5.67	**130-135.7 kHz** FIXED MARITIME MOBILE 5.64	Maritime mobile communications Inductive Loop Systems (9 – 135 kHz) RFID (70 – 135 kHz) SRDs – inductive short-range radiocommunications (9 kHz-135 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs - see ITU-R Rec.SM. 1896
135.7-137.8 kHz FIXED	**135.7-137.8 kHz** FIXED		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MARITIME MOBILE Amateur 5.67A 5.64 5.67 5.67B	MARITIME MOBILE Amateur 5.67A 5.64	Maritime mobile communications Amateur	Amateur (135.7-137.8 kHz) services are limited to maximum radiated power of 1 W (e.i.r.p). Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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	
148.5-255 kHz BROADCASTING 5.68 5.69 5.70	**148.5-160 kHz** BROADCASTING	Broadcasting	The Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Frequency Assignment Plan (GE75) applies.
	160-200 kHz FIXED 5.68		
	200-255 kHz AERONAUTICAL RADIONAVIGATION 5.70		
255-283.5 kHz BROADCASTING	**255-283.5 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
AERONAUTICAL RADIONAVIGATION 5.70 5.71	AERONAUTICAL RADIONAVIGATION 5.70	Navigational Aids	
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	Navigational Aids	
315-325 kHz AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	**315-325 kHz** AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	Navigational Aids Coast Radio Telegraph Stations Radionavigation	
325-405 kHz AERONAUTICAL RADIONAVIGATION	**325-405 kHz** AERONAUTICAL RADIONAVIGATION	Navigational Aids	
405-415 kHz RADIONAVIGATION 5.76	**405-415 kHz** RADIONAVIGATION 5.76	Navigational Aids	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
415-435 kHz MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	**415-435 kHz** MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.82	Maritime mobile communications Under the MMS the use of the band 415-495 kHz is limited to radiotelegraphy	
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 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.	
472-479 kHz MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.77 5.80B 5.82	**472-479 kHz** MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.82	Navigational Aids	
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	NAVTEX service on 490 kHz Article 31 and 32	
495-505 kHz	**495-505 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MARITIME MOBILE	MARITIME MOBILE	Limited to radiotelegraphy; Articles 31 and 52 apply.	
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 Maritime Radio Telegraphy NAVTEX service on 518 kHz Article 31 and 32 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. Navigational Aids	
526.5-1 606.5 kHz BROADCASTING 5.87 5.87A	**526.5-1 606.5 kHz** BROADCASTING	Medium Wave Sound Broadcasting (535.5 -1606.5 kHz) Inductive Loop Systems (740 – 8800 kHz)	The Terrestrial Broadcasting Frequency Plan as amended (GG No. 36321) 02 April 2013 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	
1 625-1 635 kHz RADIOLOCATION 5.93	**1 625-1 635 kHz** RADIOLOCATION	Navigational Aids	
1 635-1 800 kHz FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92 5.96	**1 635-1 800 kHz** FIXED MARITIME MOBILE 5.90 LAND MOBILE 5.92	Maritime mobile communications Land mobile communications	
1 800-1 810 kHz RADIOLOCATION 5.93	**1 800-1 810 kHz** RADIOLOCATION	Navigational Aids	
1 810-1 850 kHz AMATEUR	**1 810-1 850 kHz** AMATEUR	Amateur communications	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.98 5.99 5.100			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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 mobile applications. Maritime mobile communications Land mobile communications Amateur communications	1850-1950 kHz is used for Maritime Coast Stations; 1950-2045 kHz is used by ship stations SSB Radio Telephony. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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 mobile communications Land mobile communications	1950-2045 kHz is used by ship stations SSB Radio Telephony
2 025-2 045 kHz FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104	**2 025-2 045 kHz** FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104	Maritime mobile communications Limited to Oceanographic buoy stations	1950-2045 kHz is used by ship stations SSB Radio Telephony

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.92 5.103	5.92 5.103		
2 045-2 160 kHz FIXED MARITIME MOBILE LAND MOBILE 5.92	**2 045-2 160 kHz** FIXED MARITIME MOBILE LAND MOBILE 5.92	Maritime mobile communications Land mobile communications	
2 160-2 170 kHz RADIOLOCATION 5.93 5.107	**2 160-2 170 kHz** RADIOLOCATION	Navigational Aids	
2 170-2 173.5 kHz MARITIME MOBILE	**2 170-2 173.5 kHz** MARITIME MOBILE	Maritime mobile communications	
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	Distress & Watch keeping (2182 kHz) 2 182 kHz is an international distress and calling frequency for radiotelephony. 2 187.5 kHz – DSC for distress and calling; Article 31 applies.	Articles 31 and 52 applies

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		2 174.5 kHz – international distress frequency for NBDP telegraphy; Article 31 applies.	
2 190.5-2 194 kHz MARITIME MOBILE	**2 190.5-2 194 kHz** MARITIME MOBILE	Maritime mobile communications	
2 194-2 300 kHz FIXED MOBILE except aeronautical mobile (R) 5.92 5.103 5.112	**2 194-2 300 kHz** FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	Maritime mobile communications Land mobile communications	
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	Land Mobile and Maritime applications Sound Broadcasting	Terrestrial Broadcasting Frequency Plan 2013
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)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
2 501-2 502 kHz STANDARD FREQUENCY AND TIME SIGNAL Space Research	**2 501-2 502 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space Research		
2 502-2 625 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	Land Mobile and Maritime applications	
2 625-2 650 kHz MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	**2 625-2 650 kHz** MARITIME MOBILE MARITIME RADIONAVIGATION 5.92	Sonobuoys Maritime mobile communications	
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	Fixed Services links Maritime mobile communications Land mobile communications	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 (see Article 31)	Appendix 27 Allotment Plan applies
3 025-3 155 kHz AERONAUTICAL MOBILE (OR)	**3 025-3 155 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies
3 155-3 200 kHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	**3 155-3 200 kHz** FIXED MOBILE except aeronautical mobile (R) 5.116	Maritime mobile communications Land mobile communications SRD[5] Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz.
3 200-3 230 kHz FIXED MOBILE except aeronautical mobile (R)	**3 200-3 230 kHz** FIXED MOBILE except aeronautical mobile (R)	Maritime mobile communications	

[5] http://www.crasa.org/common_up/crasa-setup/06-07-2015_SADC%20FREQUENCIES%20FOR%20SHORT%20RANGE%20DEVICE%20(SRDs)%20CRASA%20%202011%20-ANNEXURE%20B%20AND%20C.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
BROADCASTING 5.113 5.116	BROADCASTING 5.113 5.116	Land mobile communications HF Sound Broadcasting Low power wireless hearing aids	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz.
3 230-3 400 kHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116	**3 230-3 400 kHz** FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116	HF Sound Broadcasting Low power wireless hearing aids	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Worldwide channel for low power hearing aids (3155 to 3195 kHz). Additional channels may be assigned in the band 3155 – 3400 kHz.
3 400-3 500 kHz AERONAUTICAL MOBILE (R)	**3 400-3 500 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile (R)	Appendix 27 Allotment Plan applies

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 communications Land mobile communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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)	Appendix 26 Allotment Plan applies
3 900-3 950 kHz AERONAUTICAL MOBILE (OR) 5.123	**3 900-3 950 kHz** AERONAUTICAL MOBILE (OR) BROADCASTING 5.123	Aeronautical mobile (OR)	Appendix 26 Allotment Plan applies
3 950-4 000 kHz FIXED BROADCASTING	**3 950-4 000 kHz** FIXED BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 000-4 063 kHz FIXED	**4 000-4 063 kHz** FIXED		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MARITIME MOBILE 5.127 5.126	MARITIME MOBILE 5.127	Maritime mobile communications Use of the band 4000-4063 kHz by the MMS is limited to ship stations using radiotelephony	
4 063-4 438 kHz MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	**4 063-4 438 kHz** MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132	Maritime mobile communications 4209.5 kHz - Coast Stations in the NAVTEX service; Res.339 applies. Articles 31 and 52 apply. 4207.5 kHz – DSC for distress and calling; Article 31 applies. 4177.5 kHz – international distress frequency for NBDP telegraphy; Article 31 applies. 4125 kHz – use of this frequency prescribed in Article 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); App.17 applies.	See Section 7 for details ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 communications Land mobile communications	
4 488-4 650 kHz FIXED MOBILE except aeronautical mobile (R)	**4 488-4 650 kHz** FIXED MOBILE except aeronautical mobile (R)	Aeronautical mobile	Appendix 27 Allotment Plan applies
4 650-4 700 kHz AERONAUTICAL MOBILE (R)	**4 650-4 700 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile	Appendix 26 Allotment Plan applies
4 700-4 750 kHz AERONAUTICAL MOBILE (OR)	**4 700-4 750 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile	Appendix 26 Allotment Plan applies
4 750-4 850 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**4 750-4 850 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile Land mobile	Appendix 26 Allotment Plan applies

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
BROADCASTING 5.113	BROADCASTING 5.113	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 850-4 995 kHz FIXED LAND MOBILE BROADCASTING 5.113	**4 850-4 995 kHz** FIXED LAND MOBILE BROADCASTING 5.113	Land mobile HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
4 995-5 003 kHz STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	**4 995-5 003 kHz** STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)		
5 003-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**5 003-5 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
5 005-5 060 kHz FIXED BROADCASTING 5.113	**5 005-5 060 kHz** FIXED BROADCASTING 5.113	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5 060-5 250 kHz FIXED Mobile except aeronautical mobile 5.133	**5 060-5 250 kHz** FIXED Mobile except aeronautical mobile	SADC harmonised HF frequencies for cross-border mobile communications;	
5 250-5 275 kHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A 5.133A	**5 250-5 275 kHz** FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	SADC[6] harmonised HF frequencies for cross-border mobile communications; Oceanographic Radar	Oceanographic Radars are used in accordance with ITU Resolution 612 (Rev WRC-12).
5 275-5 351.5 kHz FIXED MOBILE except aeronautical mobile	**5 275- 5 351.5 kHz** FIXED MOBILE except aeronautical mobile Amateur NF0	Amateur communications	
5 351.5-5 366.5 kHz	5 351.5-5 366.5 kHz		

[6] http://www.crasa.org/common_up/crasa-setup/10-03-2015_SADC%20FREQUENCY%20BAND%20%202013.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED MOBILE except aeronautical mobile Amateur 5.133B	FIXED MOBILE except aeronautical mobile Amateur 5.133B NF0	Amateur communications	
5 366.5-5 450 kHz FIXED MOBILE except aeronautical mobile	5 366.5-5 450 kHz FIXED MOBILE except aeronautical mobile		
5 450-5 480 kHz FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**5 450-5 480 kHz** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Aeronautical mobile	Appendix 27 Allotment plan applies
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	Appendix 27 Allotment plan applies
5 680-5 730 kHz AERONAUTICAL MOBILE (OR)	**5 680-5 730 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile	Appendix 27 Allotment plan applies Common international SRD band; see ITU-R Rec.SM

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.111 5.115	5.111 5.115	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. SRD[7] applications (6 765-6 795 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
5 730-5 900 kHz FIXED LAND MOBILE	**5 730-5 900 kHz** FIXED LAND MOBILE	Land mobile communications	
5 900-5 950 kHz BROADCASTING 5.134 5.136	**5 900-5 950 kHz** BROADCASTING 5.134 Fixed 5.136 Land Mobile 5.136	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply.
5 950-6 200 kHz BROADCASTING	**5 950-6 200 kHz** BROADCASTING	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.

[7] http://www.crasa.org/common_up/crasa-setup/06-07-2015_FRAME%20WORK%20FOR%20HARMONISATION%20FREQUENICES%20FOR%20SHORT%20RANGE%20DEVICES%20%20OF%20%20SHORT%20RANGE%20DEVICES%20%20(SRDs)%20-%20ANNEXURE%20A.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
6 200-6 525 kHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	**6 200-6 525 kHz** MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	Maritime mobile communications 6312 kHz and 6215 kHz – DSC for distress and calling; Article 31 applies 6268 kHz – international distress frequency for NBDP telegraphy; Article 31 applies. 6314 kHz – maritime safety information (MSI); App.17 applies	ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies
6 525-6 685 kHz AERONAUTICAL MOBILE (R)	**6 525-6 685 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
6 685-6 765 kHz AERONAUTICAL MOBILE (OR)	**6 685-6 765 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
6 765-7 000 kHz FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A 5.139	**6 765-7 000 kHz** FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A	Inductive Loop Systems (6765 – 6795 kHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
7 000-7 100 kHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	**7 000-7 100 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
7 100-7 200 kHz AMATEUR 5.141A 5.141B 5.141C 5.142	**7 100-7 200 kHz** AMATEUR 5.141C 5.142	Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
7 200-7 300 kHz BROADCASTING	**7 200-7 300 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
7 300-7 400 kHz BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C	**7 300-7 400 kHz** BROADCASTING 5.134 Fixed 5.143 (7300-7350 kHz) Land mobile 5.143 (7300-7350 kHz) 5.143B	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply. NINP basis to broadcasting NINP basis to broadcasting
7 400-7 450 kHz	**7 400-7 450 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
BROADCASTING 5.143B 5.143C	BROADCASTING 5.143B	HF Sound Broadcasting Inductive Loop Systems (7400 – 8800 kHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Article 12 Planning Procedures and Res.517 apply. Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
7 450-8 100 kHz FIXED MOBILE except aeronautical mobile (R)	**7 450-8 100 kHz** FIXED MOBILE except aeronautical mobile (R)	Inductive Loop Systems (7400 – 8800 kHz) SADC harmonised HF frequencies for cross-border mobile communications;	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
8 100-8 195 kHz FIXED MARITIME MOBILE	**8 100-8 195 kHz** FIXED MARITIME MOBILE	Maritime mobile communications Inductive Loop Systems (7400 – 8800 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
8 195-8 815 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**8 195-8 815 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	Digital Selective Calling (GMDSS) Distress Watch keeping on 8414.5 kHz	Appendix 15 of ITU RR See Section 7 for details

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.111	5.111	Transmission of meteorological bulletins and notices to navigators Inductive Loop Systems (7400 – 8800 kHz) Maritime mobile communications 8414.5 kHz – DSC for distress and calling; Article 31 applies 8 376.5 kHz – international distress frequency for NBDP telegraphy; Article 31 applies. 8416.5 kHz – maritime safety information (MSI); App.17 applies.	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies
8 815-8 965 kHz AERONAUTICAL MOBILE (R)	**8 815-8 965 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
8 965-9 040 kHz AERONAUTICAL MOBILE (OR)	**8 965-9 040 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
9 040-9 305 kHz FIXED	**9 040-9 305 kHz** FIXED	Fixed	
9 305-9 355 kHz	**9 305-9 355 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED Radiolocation 5.145A 5.145B	FIXED Radiolocation 5.145A	Fixed	
9 355-9 400 kHz FIXED	**9 355-9 400 kHz** FIXED		
9 400-9 500 kHz BROADCASTING 5.134 5.146	**9 400-9 500 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013
9 500-9 900 kHz BROADCASTING 5.147	**9 500-9 900 kHz** BROADCASTING 5.147	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 ITU RR Article 12 Planning Procedures applies
9 900-9 995 kHz FIXED	**9 900-9 995 kHz** FIXED	Fixed	
9 995-10 003 kHz	**9 995-10 003 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111		
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	Passive sensing	
10 005-10 100 kHz AERONAUTICAL MOBILE (R) 5.111	**10 005-10 100 kHz** AERONAUTICAL MOBILE (R) 5.111	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
10 100-10 150 kHz FIXED Amateur	**10 100-10 150 kHz** FIXED Amateur	Fixed Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
10 150-11 175 kHz FIXED Mobile except aeronautical mobile (R)	**10 150-11 175 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
11 175-11 275 kHz AERONAUTICAL MOBILE (OR)	**11 175-11 275 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
11 275-11 400 kHz AERONAUTICAL MOBILE (R)	**11 275-11 400 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	Appendix 27 Allotment Plan applies
11 400-11 600 kHz FIXED	**11 400-11 600 kHz** FIXED	Fixed	
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 apply.
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	**12 050-12 100 kHz** BROADCASTING 5.134	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.146	5.146		
12 100-12 230 kHz FIXED	**12 100-12 230 kHz** FIXED	Fixed	
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 Digital Selective Calling(GMDSS) Distress Watch keeping (12 577 kHz) Transmission of meteorological bulletins and notices to navigators 12 577 kHz – DSC for distress and calling; Article 31 applies 12 520 kHz – international distress frequency for NBDP telegraphy; Article 31 applies. 12 579 kHz – maritime safety information (MSI); App.17 applies.	Appendix 15 of ITU RR See Section 7 for details ITU RR Appendix 17 Channelling Plan applies 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	Appendix 26 Allotment Plan applies

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
13 260-13 360 kHz AERONAUTICAL MOBILE (R)	**13 260-13 360 kHz** AERONAUTICAL MOBILE (R)	Aeronautical mobile communications	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	
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 The band 13 553-13 567 kHz is designated for ISM applications (5.150). SRD[8] applications (13 553-13 567kHz)	Common international SRD band; see ITU-R Rec. SM. 1896 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
13 450-13 550 kHz FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	**13 450-13 550 kHz** FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A		

[8] http://www.crasa.org/common_up/crasa-setup/06-07-2015_SADC%20FREQUENCIES%20%20FOR%20SHORT%20RANGE%20%20DEVICES%20CRASA%202011.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149A			
13 550-13 570 kHz FIXED Mobile except aeronautical mobile (R) 5.150	**13 550-13 570 kHz** FIXED Mobile except aeronautical mobile (R) 5.150	Inductive Loop Systems (13 553 – 13 567 kHz) RFID and EAS systems (13 553 – 13 567 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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 apply.
13 600-13 800 kHz BROADCASTING	**13 600-13 800 kHz** BROADCASTING	HF Sound Broadcasting	ITU RR Article 12 Planning Procedures applies
13 800-13 870 kHz BROADCASTING 5.134 5.151	**13 800-13 870 kHz** BROADCASTING 5.134 5.151	HF Sound Broadcasting	Article 12 Planning Procedures and Res.517 apply.
13 870-14 000 kHz	**13 870-14 000 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)	Land mobile communications Maritime communications	
14 000-14 250 kHz AMATEUR AMATEUR-SATELLITE	**14 000-14 250 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
14 250-14 350 kHz AMATEUR 5.152	**14 250-14 350 kHz** AMATEUR	Amateur communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
14 350-14 990 kHz FIXED Mobile except aeronautical mobile (R)	**14 350-14 990 kHz** FIXED Mobile except aeronautical mobile (R)	SADC harmonised HF frequencies for cross-border mobile communications;	
14 990-15 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	**14 990-15 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
15 005-15 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**15 005-15 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
15 010-15 100 kHz AERONAUTICAL MOBILE (OR)	**15 010-15 100 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
15 100-15 600 kHz BROADCASTING	**15 100-15 600 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies
15 600-15 800 kHz BROADCASTING 5.134 5.146	**15 600-15 800 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply.
15 800-16 100 kHz FIXED	**15 800-16 100 kHz** FIXED	Fixed	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Fixed	
16 360-17 410 kHz MARITIME MOBILE 5.109 5.110 5.132 5.145	**16 360-17 410 kHz** MARITIME MOBILE 5.109 5.110 5.132 5.145	Maritime mobile communications Digital Selective Calling (GMDSS) Distress Watch keeping (16 804.5 kHz) Transmission of meteorological bulletins and notices to navigators. 16 804.5kHz – DSC for distress and calling; Article 31 applies. 16 695 kHz – international distress frequency for NBDP telegraphy; Article 31 applies. 16 806.5 kHz – maritime	Appendix 15 of ITU RR See Section 7 for details ITU RR Appendix 17 Channelling Plan applies ITU RR Appendix 25 Allotment Plan applies
17 410-17 480 kHz FIXED	**17 410-17 480 kHz** FIXED	Fixed	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
17 480-17 550 kHz BROADCASTING 5.134 5.146	**17 480-17 550 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply.
17 550-17 900 kHz BROADCASTING	**17 550-17 900 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. 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	Appendix 27 Allotment Plan applies
17 970-18 030 kHz AERONAUTICAL MOBILE (OR)	**17 970-18 030 kHz** AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	Appendix 26 Allotment Plan applies
18 030-18 052 kHz FIXED	**18 030-18 052 kHz** FIXED	Fixed	
18 052-18 068 kHz	**18 052-18 068 kHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED Space research	FIXED Space research	Fixed	
18 068-18 168 kHz AMATEUR AMATEUR-SATELLITE 5.154	**18 068-18 168 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
18 168-18 780 kHz FIXED Mobile except aeronautical mobile	**18 168-18 780 kHz** FIXED Mobile except aeronautical mobile	Land mobile communications	
18 780-18 900 kHz MARITIME MOBILE	**18 780-18 900 kHz** MARITIME MOBILE	Maritime communications	ITU RR Appendix 17 Channelling Plan applies
18 900-19 020 kHz BROADCASTING 5.134 5.146	**18 900-19 020 kHz** BROADCASTING 5.134 5.146	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. Article 12 Planning Procedures and Res.517 apply.
19 020-19 680 kHz FIXED	**19 020-19 680 kHz** FIXED	Fixed	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
19 680-19 800 kHz MARITIME MOBILE 5.132	**19 680-19 800 kHz** MARITIME MOBILE 5.132	19 680.5 kHz – maritime safety information (MSI); App.17 applies	The frequency 19 680.5 kHz is the international frequency for transmission of MSI.
19 800-19 990 kHz FIXED	**19 800-19 990 kHz** FIXED	Fixed	
19 990-19 995 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	**19 990-19 995 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111		
19 995-20 010 kHz STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	**19 995-20 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111		
20 010-21 000 kHz FIXED Mobile	**20 010-21 000 kHz** FIXED Mobile		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
21 000-21 450 kHz AMATEUR AMATEUR-SATELLITE	**21 000-21 450 kHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
21 450-21 850 kHz BROADCASTING	**21 450-21 850 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013. ITU RR Article 12 Planning Procedures applies
21 850-21 870 kHz FIXED 5.155A 5.155	**21 850-21 870 kHz** FIXED	Fixed[9]	
21 870-21 924 kHz FIXED 5.155B	**21 870-21 924 kHz** FIXED 5.155B	Fixed	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	Appendix 27 Allotment Plan applies

[9] http://www.crasa.org/common_up/crasa-setup/10-03-2015_FREQUENCY%20CHANNELING%20ARRANGEMENTS%20FOR%20TERRESTRIAL%20FIXED%20AND%20MOBILE%202011.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
22 000-22 855 kHz MARITIME MOBILE 5.132 5.156	**22 000-22 855 kHz** MARITIME MOBILE 5.132	22 376 kHz – maritime safety information (MSI); App.17 applies	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. The frequency 22 376 kHz is the international frequency for transmission of MSI. See Section 7 for details
22 855-23 000 kHz FIXED 5.156	**22 855-23 000 kHz** FIXED	Fixed	
23 000-23 200 kHz FIXED Mobile except aeronautical mobile (R) 5.156	**23 000-23 200 kHz** FIXED Mobile except aeronautical mobile (R)		
23 200-23 350 kHz FIXED 5.156A AERONAUTICAL MOBILE (OR)	**23 200-23 350 kHz** FIXED 5.156A AERONAUTICAL MOBILE (OR)	Aeronautical mobile communications	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	South African allocations and footnotes	Typical Applications	Notes and Comments
23 350-24 000 kHz FIXED MOBILE except aeronautical mobile 5.157	**23 350-24 000 kHz** FIXED MOBILE except aeronautical mobile 5.157		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		
24 450-24 600 kHz FIXED LAND MOBILE Radiolocation 5.132A 5.158	**24 450-24 600 kHz** FIXED LAND MOBILE Radiolocation 5.132A		
24 600-24 890 kHz FIXED LAND MOBILE	**24 600-24 890 kHz** FIXED LAND MOBILE		
24 890-24 990 kHz AMATEUR AMATEUR-SATELLITE	**24 890-24 990 kHz** AMATEUR AMATEUR-SATELLITE		Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
24 990-25 005 kHz STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	**24 990-25 005 kHz** STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		
25 005-25 010 kHz STANDARD FREQUENCY AND TIME SIGNAL Space research	**25 005-25 010 kHz** STANDARD FREQUENCY AND TIME SIGNAL Space research		
25 010-25 070 kHz FIXED MOBILE except aeronautical mobile	**25 010-25 070 kHz** FIXED MOBILE except aeronautical mobile		
25 070-25 210 kHz MARITIME MOBILE	**25 070-25 210 kHz** MARITIME MOBILE	Maritime mobile communications	ITU RR Appendix 17 Channelling Plan applies
25 210-25 550 kHz FIXED MOBILE except aeronautical mobile	**25 210-25 550 kHz** FIXED MOBILE except aeronautical mobile		
25 550-25 670 kHz RADIO ASTRONOMY	**25 550-25 670 kHz** RADIO ASTRONOMY	Radio astronomy	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149	5.149		
25 670-26 100 kHz BROADCASTING	**25 670-26 100 kHz** BROADCASTING	HF Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 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	26 100.5 kHz – maritime safety information (MSI); App.17 applies	ITU RR Appendix 17 Channelling Plan applies. ITU RR Appendix 25 Allotment Plan applies. The frequency 26 100.5 kHz is the international frequency for transmission of MSI.
26 175-26 200 kHz FIXED MOBILE except aeronautical mobile	**26 175-26 200 kHz** FIXED MOBILE except aeronautical mobile	Single Frequency Mobile Mobile systems (single frequency) CB Radio (26.96-27.410 MHz) ISM applications (26.975-27.283 MHz) SRD applications (26 957-27 283 kHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Common international SRD band; see ITU-R Rec. SM. 1896

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Single Frequency Mobile	
26 350-27 500 kHz FIXED MOBILE except aeronautical mobile 5.150	**26 350-27 500 kHz** FIXED MOBILE except aeronautical mobile 5.150	Single Frequency Mobile Inductive Loop Systems, Non-specific SRD's (26.957 – 27.283 MHz) Surface Model Control (26.995 MHz, 27.045 MHz, 27.095 MHz, 27.145 MHz and 27.195 MHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
27.5-28 MHz METEOROLOGICAL AIDS FIXED MOBILE	**27.5-28 MHz** METEOROLOGICAL AIDS FIXED MOBILE	Radiosondes	
28-29.7 MHz AMATEUR AMATEUR-SATELLITE	**28-29.7 MHz** AMATEUR AMATEUR-SATELLITE	Amateur communications Amateur-satellite communications	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
			Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
29.7-30.005 MHz FIXED MOBILE	**29.7-30.005 MHz** FIXED MOBILE Amateur NF1	 Single frequency mobile (29.7-29.99 MHz) Government Services	 Amateur – disaster and emergencies Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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	 Government Services	
30.01-37.5 MHz FIXED MOBILE	**30.01-37.5 MHz** MOBILE	 Single Frequency Mobile (32 – 32.325 MHz) Government Services Mobile 1 MTX (32.325 – 33.675 MHz) Single Frequency Mobile (33.675 – 34.175 MHz) Mobile 2 MTX (34.175 – 35 MHz)	 Paired with 41.65 – 43 MHz Paired with 40.625 – 41.25 MHz Exclusive use by Model Aircraft Control

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Model Aircraft Control (35 – 35.5 MHz) Wireless microphone (36.65 – 36.75 MHz) Single Frequency Mobile (33.25 – 33.5 MHz) Mobile 3 BTX 35.5 – 36.825 MHz Single Frequency Mobile 36.825 – 38.5 MHz PMR[10]	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 38.5 – 39.825 MHz
37.5-38.25 MHz FIXED MOBILE Radio astronomy 5.149	**37.5-38.25 MHz** MOBILE Radio astronomy 5.149	Single Frequency Mobile (36.825 – 38.5 MHz) Government Services	
38.25-39 MHz FIXED MOBILE	**38.25-39 MHz** MOBILE	Single Frequency Mobile (36.825 – 38.5 MHz) Government Services	Paired with 35.5 – 36.825 MHz

[10] http://www.crasa.org/common_up/crasa-setup/10-03-2015_GUIDELINES%20%20ON%20PMR%202014.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Mobile 3 MTX (38.5 – 39.825 MHz)	
39-39.5 MHz FIXED MOBILE Radiolocation 5.132A 5.159	**39-39.5 MHz** MOBILE Radiolocation 5.132A	Mobile 3 MTX (38.5 – 39.825 MHz) Single Frequency Mobile (39.825 – 40.625 MHz)	Paired with 35.5 – 36.825 MHz
39.5-39.986 MHz FIXED MOBILE	**39.5-39.986 MHz** MOBILE	Mobile 3 MTX (38.5 – 39.825 MHz) Single Frequency Mobile (39.825 – 40.625 MHz) PMR	Paired with 35.5 – 36.825 MHz
39.986-40.02 MHz FIXED MOBILE Space research	**39.986-40.02 MHz** MOBILE Space research	Single Frequency Mobile (39.825 – 40.625 MHz) PMR	
40.02-40.98 MHz FIXED MOBILE	**40.02-40.98 MHz** MOBILE	Single Frequency Mobile (39.825 – 40.625 MHz) Mobile 2 BTX (40.625 – 41.45 MHz)	Paired with 34.175 – 35 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.150	5.150	Wireless microphones (40.65 – 40.7 MHz) Non-specific SRD's (40.66 – 40.7 MHz) Surface Model Control (40.665 MHz, 40.675 MHz, 40.685 MHz, 40.695 MHz) ISM applications (40.66 – 40.7 MHz) PMR	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896
40.98-41.015 MHz FIXED MOBILE Space research 5.160	**40.98-41.015 MHz** MOBILE Space research	Mobile 2 BTX (40.625 – 41.45 MHz) PMR	Paired with 34.175 – 35 MHz)
41.015-42 MHz FIXED MOBILE 5.160	**41.015-42 MHz** MOBILE	Mobile 2 BTX (40.625 – 41.45 MHz) Single Frequency Mobile (41.45 – 41.65 MHz) Mobile 1 BTX (41.65 – 43 MHz) Government Services PMR	Paired with 34.175 – 35 MHz Paired with 32.325 – 33.675 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
42-42.5 MHz FIXED MOBILE Radiolocation 5.132A 5.160 5.161B	**42-42.5 MHz** MOBILE Radiolocation 5.132A	Mobile 1 BTX (41.65 – 43 MHz) Government Services Oceanographic radars	Paired with 32.325 – 33.675 MHz
42.5-44 MHz FIXED MOBILE 5.160	**42.5-44 MHz** MOBILE	Mobile 1 BTX (41.65 – 43 MHz) Government Services	Paired with 32.325 – 33.675 MHz
44-47 MHz FIXED MOBILE 5.162 5.162A	**44-47 MHz** FIXED MOBILE	Meteor Burst (45.3 – 46.9 MHz) CT0 Cordless Telephones BTX (46.61 – 46.97 MHz) Government Services PMR Meteor Burst (45.3-46.9 MHz) CT0 Cordless Telephony BTx (46.61-46.97 MHz)	Paired with 47.5 – 49.1 MHz 10 frequency pairs assigned to CT0; paired with 49.67 – 49.97 MHz; Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 47.5-49.1 MHz)
47-68 MHz BROADCASTING	**47-50 MHz** BROADCASTING		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
	LAND MOBILE 5.164	CT0 Cordless Telephones MTX (49.67 – 49.97 MHz) PMR Meteor Burst (47.5-49.1 MHz) CT0 Cordless Telephony MTx (49.67-49.97 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Paired with 45.3-46.9 MHz Paired with 46.61 – 46.97 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 45.3-46.9 MHz
	50-54 MHz AMATEUR 5.169	Wireless microphones (53 – 54 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
	54-68 MHz BROADCASTING FIXED 5.171 MOBILE except aeronautical mobile 5.171	Government Services Model control (54.45 – 54.55 MHz) PMR Single Frequency Mobile (54 – 54.325 MHz) Mobile 1 BTX (54.325 – 54.45 MHz) Mobile 2 BTX (55.45 – 56.85 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.162A 5.163 5.164 5.165 5.169 5.171		Single Frequency Mobile (56.85 – 58.5 MHz) Mobile 2 MTX (58.5 – 59.9 MHz) Mobile 1 MTX (59.9 – 60.025 MHz) Spare60.025-60.215 MHz Sport Stadium Communications (62.8 – 62.85 MHz) National Emergency Alarm Radio (NEAR) (66 – 68 MHz)	Paired with 59.9 – 60.025 MHz Paired with 58.5 – 59.9 MHz Paired with 55.45 – 56.85 MHz Paired with 54.325 – 54.45 MHz
68-74.8 MHz FIXED MOBILE except aeronautical mobile 5.149 5.175 5.177 5.179	**68-74.8 MHz** MOBILE except aeronautical mobile Amateur (70 – 70.3 MHz) NF2 Radio Astronomy (73 – 74.6 MHz) 5.149	 Single Frequency Mobile (68 – 69.25 MHz) Mobile 1 BTX (69.25 – 70 MHz) Mobile 2 BTX (70 – 70.975 MHz) Single Frequency Mobile (70.975 – 71.475 MHz) Mobile 3 BTX (71.475 – 72.525 MHz) Single Frequency Mobile (72.525 – 73.425 MHz) Mobile 4 BTX (73.425 – 74.8 MHz) PMR and/or PAMR	 Paired with 76.175 – 76.925 MHz Paired with 75.2 – 76.175 MHz Current assignments for fire fighting Paired with 76.925 – 77.975 MHz Paired with 78.625 – 80 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
74.8-75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	**74.8-75.2 MHz** AERONAUTICAL RADIONAVIGATION 5.180	Instrument Landing System Markers 74.80 – 75.20 Marker beacons (75 MHz)	
75.2-87.5 MHz FIXED MOBILE except aeronautical mobile 5.175 5.179 5.187	**75.2-87.5 MHz** MOBILE except aeronautical mobile	Mobile 2 MTX (75.2 – 76.175 MHz) Mobile 1 MTX (76.175 – 76.925 MHz) Mobile 3 MTX (76.925 – 77.975 MHz) Mobile 4 MTX (78.625 – 80 MHz) Mobile 5 BTX (77.975 – 78.625 MHz) Mobile 6 BTX (80 – 80.5 MHz) Single Frequency Mobile (80.5 – 81 MHz) Mobile 7 BTX (81 – 81.625 MHz) Mobile 8 BTX (81.625 – 82.975 MHz) Mobile 5 MTX (82.975 – 83.625 MHz) Single Frequency Mobile (83.625 – 85.025 MHz) Mobile 8 MTX (85.025 – 86.375 MHz)	Paired with 70 – 70.975 MHz Paired with 69.25 – 70 MHz Paired with 71.475 – 72.525 MHz Paired with 73.425 – 74.8 MHz Paired with 82.975 – 83.625 MHz Paired with 87 – 87.5 MHz Paired with 86.375 - 87 MHz Paired with 85.025 - 86.375 MHz Paired with 77.975 - 78.625 MHz Paired with 81.625 - 82.975 MHz Paired with 81 - 81.625 MHz Paired with 80 - 80.5 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Mobile 7 MTX (86.375 – 87 MHz) Mobile 6 MTX (87 – 87.5 MHz) PMR and/or PAMR	
87.5-100 MHz BROADCASTING 5.190	**87.5-100 MHz** BROADCASTING	FM Sound Broadcasting (87.5-108 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Geneva agreement GE84
100-108 MHz BROADCASTING 5.194	**100-108 MHz** BROADCASTING	FM Sound Broadcasting (87.5-108 MHz)	The Terrestrial Broadcasting Frequency Plan (GG no.36321) 02 April 2013 Geneva agreement GE84
108-117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	**108-117.975 MHz** AERONAUTICAL RADIONAVIGATION 5.197A	ILS localiser (108 – 112 MHz) VOR (VHF Omni-directional Range) (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)	**117.975-137 MHz** AERONAUTICAL MOBILE (R)	117.975-121.450 MHz Aeronautical mobile communications	Safety and regularity of flights

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		121.450-121.550 MHz International Distress Frequency (121.5 MHz)	EPIRBs at 121.5 MHz ITU RR Article 31 applies
5.111 5.200 5.201 5.202	5.111 5.200	121.550-137.000 MHz Aeronautical mobile communications	123.1 MHz - auxiliary emergency frequency
137-137.025 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.208	**137-137.025 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R) 5.208	MET SAT	
137.025-137.175 MHz SPACE OPERATION (space-to-Earth)	**137.025-137.175 MHz** SPACE OPERATION (space-to-Earth)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.208	METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208		
137.175-137.825 MHz SPACE OPERATION (space-to-Earth) 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)	**137.175-137.825 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Mobile except aeronautical mobile (R)	NOAA meteorological satellite (137.5 – 137.62 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.204 5.205 5.206 5.208	5.208		
137.825-138 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.208	**137.825-138 MHz** SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.208		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
138-143.6 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**138-143.6 MHz** FIXED MOBILE 5.212	Single Frequency Alarms (140.5 – 141 MHz) Mobile 1 MTX (138 – 140.5 MHz) Single Frequency Mobile (141 – 141.5 MHz) Mobile 1 BTX (141.5 – 144 MHz) Remote control industrial apparatus (141 – 142 MHz) PMR and / or PAMR	Paired with 141.5 - 144 MHz Paired with 138 – 140.5 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
143.6-143.65 MHz AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	**143.6-143.65 MHz** FIXED MOBILE 5.212	Mobile 1 BTX (141.5 – 144 MHz) PMR and / or PAMR	Paired with 138 – 140.5 MHz Allocation includes BTX assignments at 142.8 – 143.275 MHz and 143.325 - 143.975 MHz
143.65-144 MHz AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	**143.65-144 MHz** FIXED MOBILE 5.212	Mobile 1 BTX (141.5 – 144 MHz) PMR and / or PAMR	Paired with 138 – 140.5 MHz Allocation includes BTX assignments at 142.8 – 143.275 MHz and 143.325 - 143.975 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
144-146 MHz AMATEUR AMATEUR-SATELLITE	**144-146 MHz** AMATEUR AMATEUR-SATELLITE		
146-148 MHz FIXED MOBILE except aeronautical mobile (R)	**146-148 MHz** MOBILE except aeronautical mobile (R)	Mobile 2 MTX (146 – 148.95 MHz) PMR and / or PAMR	Paired with 153.05 – 156 MHz
148-149.9 MHz FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	**148-149.9 MHz** MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 NF3 5.218 5.219 5.221	Mobile 2 MTX (146 – 148.95 MHz) Single Frequency Mobile (148.950 – 151 MHz) Wildlife telemetry Tracking (148 – 152 MHz) Low Earth Orbit systems	Paired with 153.05 – 156 MHz Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Systems are paired with either 137 – 138 MHz or 400.15 – 401 MHz For some small LEO systems this band is supplemented by the band 149.9-150.05 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
149.9-150.05 MHz MOBILE-SATELLITE (Arth-to-sace) 5.209 5.220	**149.9-150.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 NF3	Low Earth Orbit systems Mobile-satellite communications Wildlife telemetry Tracking (148 – 152 MHz) Single Frequency Mobile (148.950 – 151 MHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
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	Single frequency alarms (152.05 – 152.55 MHz) Alarms, Single Frequency Mobile and Load Shedding (148.950 – 151 MHz) PMR and PAMR Paging Government Services Wildlife Telemetry Tracking (148 – 152 MHz) Single Frequency Mobile (152.55 – 153.05 MHz)	Channels 150.550 MHz and 150.5625 MHz are used for load shedding. Channels 150.625 MHz and 150.675 MHz are reserved for in-house paging Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
153-154 MHz FIXED	**153-154 MHz** MOBILE except aeronautical mobile (R)	Single Frequency Mobile (152.55 – 153.05	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE except aeronautical mobile (R) Meteorological aids	 Meteorological aids	MHz) Mobile 2 BTX (153.05 – 156 MHz) PMR and/or PAMR	Paired with 146 – 148.95 MHz
154-156.4875 MHz FIXED MOBILE except aeronautical mobile (R)	**154-156.4875 MHz** MOBILE except aeronautical mobile (R)	154-156 MHz PMR and/or PAMR Maritime Mobile Mobile 2 BTX (153.05 – 156 MHz) Mobile 3 MTX (156 – 156.7625 MHz) Single Frequency Mobile (156.375 – 156.7625 MHz)	See Section 7 for details Paired with 146 – 148.95 MHz Paired with 160.6 – 160.975 MHz (156 – 156.375 MHz allocated to land mobile MTX in inland areas) Limited to inland areas
		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.
5.225A 5.226	5.226		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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) FIXED 5.227 LAND MOBILE 5.227 5.111 5.226	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. Single Frequency Mobile (156.375 – 156.7625 MHz)	The use of this band by the maritime services shall be in accordance with ITU Appendix 18. ITU RR Articles 31 and 52 and Appendix 18 apply. NINP basis to Maritime Mobile Service; Limited to inland areas
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	156.5625-156.7625 MHz Maritime mobile communications. Land mobile in areas remote from coast.	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)	**156.7625-156.7875 MHz** MARITIME MOBILE Mobile-satellite (Earth-to-space)	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 the frequency 156.8 MHz and this band.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.111 5.226 5.228	5.111 5.226 5.228	Distress safety and calling (156.76250 – 156.8375)	
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	Distress safety and calling (156.76250 – 156.8375**, channel 16**)	See Section 7 for details
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	Distress safety and calling (156.76250 – 156.8375)	
156.8375-161.9375 MHz **FIXED** MOBILE -except aeronautical mobile	**156.8375-161.9375 MHz** **FIXED** MOBILE -except aeronautical mobile	Government Services 156.8375-157.45 MHz Maritime mobile communications (ship stations). Land mobile in areas remote from coast.	Paired with 161.5-162.0 MHz and single frequency applications; ITU RR Articles 31 and 52 and Appendix 18 apply.
		157.450-160.6 MHz PMR and/or PAMR	
		160.600-160.975 MHz Maritime mobile communications (Coast stations).	Paired with 156.025-156.350 MHz; ITU RR Articles 31 and 52 and Appendix 18 apply.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Land mobile in areas remote from coast.	
		160.975-161.475 MHz PMR and/or PAMR	Single frequency applications.
		161.475-162.050 MHz Maritime mobile communications (Coast stations) Land mobile in areas remote from coast Automatic Identification System (AIS) at 161.975 MHz and 162.025 MHz	Paired with 156.9-157.4 MHz; ITU RR Articles 31 and 52 and Appendix 18 apply.
		162.050-174 MHz PMR and/or PAMR	
5.226	5.226		
161.9375 -161.9625 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA	**161.9375 -161.9625 MHz** MOBILE except aeronautical mobile NF4 Maritime mobile-satellite (Earth-to-space) 5.228AA	 Sonobuoy (161.875 – 173.875) Transmission of meteorological bulletins and notice to navigators Mobile 1 MTX-DF (161.475 – 165.0375 MHz)	 See Section 7 for details Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz) Inland areas only

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.226	5.226	Single Frequency Mobile (160.45 – 161.475 MHz) Single Frequency Mobile (156.8375 – 156.875 MHz) Private Maritime MTX (157.45 – 157.95 MHz)	Paired with 162.05 – 162.55 MHz
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** MOBILE except aeronautical mobile NF4 Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Mobile 1 MTX-DF (161.475 – 165.0375 MHz)	Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz)
161.9875-162.0125 MHz FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229	**161.9875-162.0125 MHz** MOBILE except aeronautical mobile NF4 Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	Transmission of meteorological bulletins and notice to navigators Mobile 1 MTX-DF (161.475 – 165.0375 MHz)	See Section 7 for details Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz)
162.0125-162.0375 MHz FIXED	**162.0125-162.0375 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B 5.229	MOBILE except aeronautical mobile NF4 Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	Mobile 1 MTX-DF (161.475 – 165.0375 MHz)	Paired with Mobile 1 BTX-DF (156.875 – 160.4375 MHz)
162.0375-174 MHz FIXED MOBILE except aeronautical mobile	**162.0375-174 MHz** MOBILE except aeronautical mobile NF4	Mobile 1 MTX-DF (161.475 – 165.0375 MHz) Mobile 2 MTX-DF (165.05 – 165.5375 MHz) Single Frequency Mobile (168.95 – 170.05 MHz) Mobile 3 MTX-DF (165.55 – 167.4875 MHz) Single Frequency Mobile (172 – 172.0375 MHz) Mobile 4 MTX-DF (167.5 – 168.9375 MHz) Meter Reading (169.4 – 169.475 MHz) Non-specific SRD's – Telecommand only (173.2125 – 173.2375 MHz)	Paired with Mobile 2 BTX-DF (170.05 – 170.5375 MHz) Paired with Mobile 3 BTX-DF (172.05 – 173.9875 MHz) Paired with Mobile 4 BTX (170.55 – 171.9875 MHz) Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). .

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.226 5.229	5.226 NF5	Non-specific SRDs (173.2375 – 173.2875 MHz) Wireless microphones and assistive listening devices (173.7 – 175.1 MHz)	
174-223 MHz BROADCASTING 5.235 5.237 5.243	**174-223 MHz** BROADCASTING NF5	Television Broadcasting (174 – 214 MHz) T-DAB (214 – 230 MHz) Sound-Broadcasting Wireless microphones (173.7 – 175.1 MHz)	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 TV Band III Migration from analogue to digital is harmonised in SADC. Digital sound broadcasting is being planned in this band.
223-230 MHz BROADCASTING Fixed Mobile	**223-230 MHz** BROADCASTING	T-DAB (214 – 230 MHz) Sound Broadcasting	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013 TV Band III Migration from analogue to digital is harmonised in SADC. Digital sound broadcasting is being planned in this band.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.243 5.246 5.247			
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-238 MHz** BROADCASTING 5.252 5.254	Television broadcasting (230 – 238 MHz)	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013
235-267 MHz FIXED MOBILE	**238-246 MHz** MOBILE 5.111 5.252 5.254 5.256	238-242.95 MHz PMR and/or PAMR	Future consideration for Broadcasting in 238 – 240 MHz
		International Distress Frequency at 243 MHz (242.95 – 243.05 MHz)	Band available for distress and safety purposes.
		243.05-246.00 MHz Low-power devices	Low-power devices ancillary to the broadcasting service.
	246-254 MHz BROADCASTING 5.252	Television broadcasting (246-254 MHz)	The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.111 5.252 5.254 5.256 5.256A	**254-267 MHz** MOBILE 5.254	Trunking BTX (254 – 259.4 MHz) Trunking MTX (262 – 267.4 MHz) Government Services 267.4-272 MHz	Paired with 262 – 267.4 MHz Paired with 254 – 259.4 MHz
267-272 MHz FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	**267-272 MHz** MOBILE Space operation (space-to-Earth) 5.254 5.257	Government Services Trunking MTX (262 – 267.4 MHz)	Paired with 254 – 259.4 MHz
272-273 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE	**272-273 MHz** MOBILE	Government Services	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.254	5.254		
273-312 MHz FIXED MOBILE 5.254	**273-312 MHz** MOBILE 5.254	Single Frequency Mobile (278 – 286 MHz) Government Services	
312-315 MHz FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	**312-315 MHz** MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	Government Services	
315-322 MHz FIXED MOBILE 5.254	**315-322 MHz** MOBILE 5.254	Government Services	
322-328.6 MHz FIXED MOBILE RADIO ASTRONOMY 5.149	**322-328.6 MHz** MOBILE RADIO ASTRONOMY 5.149	Government Services	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
328.6-335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259	**328.6-335.4 MHz** AERONAUTICAL RADIONAVIGATION 5.258	ILS Glide Path	
335.4-387 MHz FIXED MOBILE	**335.4-387 MHz** FIXED NF6 MOBILE NF7	FWA (336 – 346 MHz) FWA (356 – 366 MHz) 366-380 MHz (Govt.) Digital Trunking (Emergency) (380 – 387 MHz) (PPDR[11]) 335.4-336 MHz PMR and/or PAMR	Paired with 356 – 366 MHz Paired with 336 – 346 MHz Paired with 390 – 397 MHz
		336-346 MHz Fixed Wireless Access 336-346 Unmanned Aerial Vehicle (UAV)	PTP/PTMP system; Paired with 356-366 MHz Unmanned Aerial Vehicle (UAV) 336-346 paired with 356-366 MHz. (Coordination is required with PTP/PTMP in the implement of UAV)
		356.0-366.0 MHz Fixed Wireless Access	PTP/PTMP system; Paired with 336-346 MHz

[11] http://www.crasa.org/common_up/crasa-setup/12-03-2015_GUIDELINES%20ON%20FREQUENCIES%20FOR%20PPDR%202014.pdf

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		366.0-380.0 MHz PMR and/or PAMR	
5.254	5.254		
387-390 MHz FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	**387-390 MHz** MOBILE NF7 Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	Digital Trunking (387 – 390 MHz) (Govt.) 387.0-390.0 MHz PMR and/or PAMR	Paired with 397 – 399.9 MHz Paired with 397.0-399.9 MHz (To be used mainly for digital systems.)
390-399.9 MHz FIXED MOBILE	**390-399.9 MHz** MOBILE NF7	Emergency) (390 – 397 MHz) (PPDR)	Paired with 380 – 387 MHz
		Government Services PMR and/or PAMR (397 – 399.9 MHz) (Govt.)	Paired with 387 – 390 MHz In accordance with Resolution 646 and Recommendation ITU-R M.2015.
5.254	5.254		
399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	**399.9-400.05 MHz** MOBILE-SATELLITE (Earth-to-space) 5.209 5.220		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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		
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) 5.264	Radiosondes	
401-402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth)	**401-402 MHz** METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth)	Radiosonde Data uplink to Geostationary Satellite orbit	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile			
402-403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	**402-403 MHz** METEOROLOGICAL AIDS Mobile except aeronautical mobile	Radiosonde Medical implants (402 – 405 MHz) Various SRD's (402 – 406 MHz) SRDs – ultra low power active medical implants	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). SRDs – see ITU-R Rec. SM.1896 and Rec. RS.1346
403-406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile **5.265**	**403-406 MHz** METEOROLOGICAL AIDS Mobile except aeronautical mobile 5.265	Radiosonde Medical implants (402 – 405 MHz) Various SRD's (402 – 406 MHz)	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	COSPAS – SARSAT: Emergency Position Indicating Radio Beacon (EPIRB) Low power satellite EPIRBs (distress and safety purposes)	Public Locator Beacon 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	Mobile MTX (407.625 – 410 MHz) Government use for public safety Fixed Links (406.1 – 407.625 MHz) Fixed Links (407.625 – 410 MHz) Mobile MTX (406.1 – 407.625 MHz) Mobile MTX (407.625 – 410 MHz) PMR and/or PAMR PPDR	 Paired with 416.1 – 417.625 MHz Paired with 417.625 – 420 MHz Paired with 416.1 – 417.625 MHz Paired with 417.625 – 420 MHz (Government use for public safety) The use of this band for PPDR to be studied.
410-420 MHz FIXED MOBILE except aeronautical mobile	**410-420 MHz** FIXED MOBILE except aeronautical mobile	Mobile MTX (410 – 413 MHz) Government Services Mobile MTX (410 – 413 MHz) Mobile MTX Digital Trunking (410 – 413 MHz)	 Paired with 420 – 423 MHz (Government Services) Paired with 420 – 423 MHz Paired with 423-423.7625 MHz Paired with 423.7625 – 426.1 MHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
SPACE RESEARCH (space-to-space) 5.268	SPACE RESEARCH (space-to-space) 5.268	Mobile Data MTX (413-413.7625 MHz) Digital Trunking MTX (413.7625 – 416.1 MHz) Mobile BTX (416.1 – 417.625 MHz) PMR and/or PAMR PPDR	Paired with 406.1 – 407.625 MHz The use of this band for PPDR to be studied.
420-430 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	**420-430 MHz** FIXED MOBILE except aeronautical mobile Radiolocation	Single Frequency Links (426.1 – 430 MHz) Digital Trunked Mobile BTX (420 – 423 MHz) Mobile Data BTX (423 – 423.7625 MHz) Digital Trunking BTX (423.7625 – 426.1 MHz) PMR and/or PAMR PPDR	Frequencies will only be assigned for SF links where migration above 1 GHz would be impractical Paired with 410 - 413 MHz (Government use) Paired with 413 – 413.7625 MHz Paired with 413.7626 – 416.1 MHz The use of this band for PPDR to be studied.
430-432 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	**430-432 MHz** AMATEUR NF8 RADIOLOCATION	Amateur	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 NF8 Amateur satellite (435 – 438 MHz) RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.282	 Non Specific SRD including RFID (433.05 – 434.79 MHz) Non-Specific SRD's (433.05 – 434.79 MHz) ISM applications Amateur (432-438 MHz) Amateur-satellite (435-438 MHz) ISM (433.0-434.79 MHz)	 Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Conditions for amateur satellite service is given in 5.282
438-440 MHz AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	**438-440 MHz** AMATEUR NF8	Amateur	Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
440-450 MHz FIXED	**440-450 MHz** FIXED	Telemetry / Data BTX (440 – 441 MHz)	Paired with 445 – 446 MHz (MTX) Channels 440.0125, 440.3625, 445.0125 and 445.3625 MHz are used for Agricultural Telemetry. Paired with 440 – 441 MHz (BTX)

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	MOBILE except aeronautical mobile 5.286	Telemetry / Data MTX (445 – 446 MHz) Single Frequency Mobile (441 – 441.1 MHz) Mobile BTX (441.1 – 445 MHz) PMR 446 (446 – 446.1 MHz) Mobile 446.1 – 450 MHz PMR and/or PAMR PPDR PMR446 (446-446.1 MHz) FIXED (telemetry, dual frequency alarm systems)	Channels 440 - 440.100 MHz and 445 – 445.1 MHz are used as simplex. Channels 440.275 MHz, 440.2875 MHz, 445.2750 MHz, 445.2875 MHz, 440.375 MHz and 445.375 MHz are roving simplex channels. Paired with 446.1 – 450 MHz (MTX) 8 channels - Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015). Paired with 441.1 – 445 MHz The use of this band for PPDR to be studied. PMR446-ERC/DEC/ (98)25
450-455 MHz FIXED MOBILE 5.286AA	**450-455 MHz** FIXED MOBILE 5.286AA NF9	Fixed links (450 – 453 MHz) Single Frequency Mobile (453 – 454 MHz) Government Services Paging (454 – 454.425 MHz) Trunked Mobile BTX (454.425 – 460 MHz) IMT450 (450 – 470 MHz) Fixed links (PTP)	Paired with 460 – 463 MHz Recommendation ITU-R M.1036 Paired with 464.425 – 470 MHz This band is currently used for a variety of fixed and mobile systems in the various SADC countries. This band is also identified for IMT (Res.224 applies).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	5.209 5.286 5.286A	IMT (450-470 MHz) PMR and/or PAMR	
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 NF9 5.209 5.286A	Trunked mobile BTX (454.425 – 460 MHz) IMT450 (450 – 470 MHz) Government Services	Paired with 464.425 – 470 MHz Recommendation ITU-R M.1036
456-459 MHz FIXED MOBILE 5.286AA 5.271 5.287 5.288	**456-459 MHz** FIXED MOBILE 5.286AA NF9 5.287	Trunked mobile BTX (454.425 – 460 MHz) IMT450 (450 – 470 MHz) Government Services	Paired with 464.425 – 470 MHz Recommendation ITU-R M.1036
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 NF9 5.209 5.271 5.286A	Trunked Mobile BTX 454.425 – 460 MHz IMT450 (450 – 470 MHz) Government Services	Paired with 464.425 – 470 MHz Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015 Recommendation ITU-R M.1036

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
460-470 MHz FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) 5.287 5.288 5.289 5.290	**460-470 MHz** FIXED MOBILE 5.286AA NF9 5.287 5.289	 Fixed Links (460 – 463 MHz) Single Frequency Mobile (463.025 – 463.975 MHz) Low Power Mobile Radio (463.975 MHz, 464.125 MHz, 464.175 MHz, 464.325 MHz, 464.375 MHz) Single Frequency Mobile (464.375 – 464.425 MHz) Trunked Mobile MTX (464.425 – 470 MHz) IMT450 (450 – 470 MHz) Security Systems (464.5375 MHz) Non-specific SRDs (464.5 – 464.5875 MHz) Government Services	Paired with 450 – 453 MHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Recommendation ITU-R M.1036 Paired with 454.425 – 460 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
470-694 MHz BROADCASTING	**470-694 MHz** BROADCASTING RADIO ASTRONOMY 5.304	DTT Broadcasting (470-694 MHz) Radio Astronomy (606 – 614 MHz)	Broadcasting Allotments in accordance with GE89 and GE06. Broadcast assignments in accordance with the latest version of the Terrestrial Broadcasting Frequency Plan as amended (GG No.36321) 02 April 2013. Band IV/V Analogue television is to be migrated to digital television and

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312	5.149 5.311A	SAP/SAB Applications	ensure harmonisation with SADC. The use of 'White Spaces' in this band is under consideration (subject to Non Interference Non Protection basis to users under a primary allocation).470 - 606 MHz, max. 50 mW ERP 606 - 614 MHz, max. 50 mW ERP
694-790 MHz MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING 5.300 5.311A 5.312	**694-790 MHz** MOBILE except aeronautical mobile 5.312A 5.317A NF9 BROADCASTING 5.300 5.311A 5.312 NF8A	IMT700 (694 – 790 MHz)	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. IMT in accordance with ITU-R Recommendation M.2090 and Resolution **760 (WRC-15**) applies Recommendation ITU-R M.1036 Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 694-790 MHZ as described in the most

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.300 5.311A 5.312	5.311A		recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC15) for technical and operational measures.
790-862 MHz FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.312 5.319	**790-862 MHz** FIXED MOBILE except aeronautical mobile 5.316B 5.317A NF9 BROADCASTING 5.312 5.319 NF8A	Fixed Links (856 – 864.1 MHz) IMT800 BTX (791 – 821 MHz) Wireless Access (827.775 – 832.695 MHz) IMT800 MTX (832 – 862 MHz) Television Broadcasting (470 – 854 MHz)	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The fixed links have to be migrated along with the broadcasting service in line with Radio Frequency Migration Plan. Band IV/V analogue television is to be migrated to digital television and ensure harmonisation with SADC. WRC-07, WRC-12 and WRC-15 allocated this band to Mobile service except aeronautical mobile and identified it for IMT.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
			Fixed links operating in this band will have to be migrated in order to accommodate IMT. Consideration of the future spectrum needs of Broadband Public Protection and Disaster Relief (PPDR) in the range 790-862 MHZ as described in the most recent ITU-R M.2015, while taking into account studies called for by Resolution 646 (WRC15) for technical and operational measures.
862-890 MHz FIXED MOBILE except aeronautical mobile 5.317A	**862-890 MHz** FIXED MOBILE except aeronautical mobile 5.317A NF10	Fixed Links (856 – 864.1 MHz) Wireless Access (872.775 – 877.695 MHz) GSM-R (MTX) (877.695 – 880 MHz) NF10 IMT900 MTX (880 – 915 MHz) Wireless Audio systems and Wireless microphones (863 – 865 MHz) CT2 cordless phones (864.1 – 868.1 MHz) FWA (864.1 – 868.1 MHz) RFID (865 – 868 MHz) Non-specific SRD and RFID (869.4 – 869.65 MHz) Non Specific SRDs (868 – 868.6 MHz, 868.7 – 869.2 MHz,	Paired with 868.1 – 876 MHz Paired with 827.775 – 832.695 MHz Paired with 921 – 925 MHz Paired with 925 – 960 MHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Recommendation ITU-R M.1036

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
BROADCASTING 5.322 5.319 5.323		869.4 – 869.65 MHz, 869.7 – 870.0 MHz) Alarms (868.6 – 868.7 MHz, 869.25 – 869.3 MHz, 869.65 – 869.7 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
890-942 MHz	**890-942 MHz**		
FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	MOBILE except aeronautical mobile 5.317A NF9 NF10 NF11	GSM-R (BTX) (921 - 925 MHz) IMT900 MTX (880 – 915 MHz) IMT900 BTX (925 – 960 MHz) RFID (including, passive tags and vehicle location (915.1 – 921 MHz) 915-921 MHz	Paired with 877.695 – 880 MHz Paired with 925 – 960 MHz Paired with 880 – 915 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Paired with 876-880 MHz
		921-925 MHz GSM-R	
		925-960 MHz IMT	
			Paired with 880-915 MHz
5.323			

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
942-960 MHz	**942-960 MHz**		
FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	MOBILE except aeronautical mobile 5.317A NF9	IMT900 BTX (925 – 960 MHz)	Paired with 880 – 915 MHz Recommendation ITU-R M.1036
960-1 164 MHz AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328 5.328AA	**960-1 164 MHz** AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328 5.328AA	Distance measuring equipment / Secondary surveillance radar	
1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B	**1 164-1 215 MHz** AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B	Galileo (1164 – 1214 MHz) GLONASS (1190.3 – 1213.8 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.328A	5.328A		
1 215-1 240 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	**1 215-1 240 MHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.331 5.332	Radar/navigation systems (1215 – 1300 MHz) GPS (1215 – 1260 MHz) GLONASS (1237.8-1253.8 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	**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	Air Traffic Control Radar (1 240 – 1 350 MHz) Radar/navigation systems (1215 – 1300 MHz) GPS (1215 – 1260 MHz) GLONASS (1237.8 – 1253.8 MHz) Galileo (1260 – 1300 MHz) Amateur (1 240 – 1 300 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.282 5.330 5.331 5.332 5.335 5.335A	5.282 5.331 5.332 5.335A		
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) Radio Astronomy 5.149 5.337A	Air Traffic Control Radar (1 240 – 1 350 MHz)	
1 350-1 400 MHz FIXED	**1 350-1 400 MHz** FIXED NF 14	1 350-1 375 MHz Fixed links (duplex) 1 375-1 400 MHz Fixed links (duplex)	Paired with 1492-1517 MHz; ITU-R F.1242 refers. Paired with 1427-1452 MHz;

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE RADIOLOCATION 5.149 5.338 5.338A 5.339	MOBILE RADIOLOCATION Radio Astronomy 5.149 5.338A 5.339		ITU-R F.1242 refers.
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	Passive sensing	
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 NF14 MOBILE except aeronautical mobile 5,341A 5.338A 5.341	1 427-1 452 MHz Fixed links (duplex)	Paired with 1 375 – 1 400 MHz In accordance with Recommendation ITU-R F.1242 ITU Res. 223 (Rev.WRC-15)

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 429-1 452 MHz FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341 5.342	**1 429-1 452 MHz** FIXED MOBILE except aeronautical mobile 5.341A 5.338A 5.341	1 427-1 452 MHz Fixed links (duplex)	Paired with 1 375 – 1 400 MHz) In accordance with Recommendation ITU-R F.1242
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 NF14 MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345 NF12	)	studies called for Resolution **761 (WRC-15)** on the "Compatibility of International Mobile Telecommunications and broadcasting-satellite service and take appropriate regulatory and technical studies, with a view to ensuring the compatibility of IMT and BSS (sound) are undertaken within the ITU-R ITU-R Res. 223 (Rev.WRC-15) ITU-R Res. 223 (Rev.WRC-15)
1 492-1 518 MHz	**1 492-1 518 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED MOBILE except aeronautical mobile 5.341A 5.341 5.342	FIXED MOBILE except aeronautical mobile 5.341A 5.341	Fixed Links (1 492 – 1 517 MHz) Single Frequency Links (1 517 – 1 525 MHz)	Paired with 1 350 – 1 375 MHz In accordance with Recommendation ITU-R F.1242 ITU-R Res. 223 (Rev.WRC-15) (Sharing and Compatibility Studies called for by Resolution 223 (Rev. WRC-15) are underway within the ITU-R)
1 518-1 525 MHz FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	**1 518-1 525 MHz** FIXED MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.351A 5.341	IMT Satellite component	The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 5.341 5.351 5.354	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies.
1 530-1 535 MHz SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed	**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	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	Mobile except aeronautical mobile 5.341 5.351 5.354		
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	**1 535-1 559 MHz** MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.356 5.357 5.357A	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1518-1559 MHz is identified for satellite component of IMT; Res.225 applies. In the band 1530-1544 MHz priority for maritime mobile distress, urgency and safety communications (GMDSS); Res.222 applies.
1 559-1 610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 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	Global Positioning System (1 563.42 – 1 587.42 MHz) GALILEO (1559.42 – 1591.42 MHz), GLONAS (1592.9 – 1610.5 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 610-1 610.6 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.364 5.366 5.367 5.368 5.371 5.372	MSS (1 610 – 1 626.5 MHz) GLONASS (1 592.9 – 1610.5 MHz)	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2483.5-2484.1 MHz for some systems.
1 610.6-1 613.8 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610.6-1 613.8 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372	MSS (1 610 – 1 626.5 MHz)	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies. This band is designated world-wide for the MSS. Paired with 2484.1-2487.3 MHz for some systems.
1 613.8-1 626.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION	**1 613.8-1 626.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION	MSS (1 610 – 1 626.5 MHz)	Paired with 2 483.5 – 2 500 MHz for some systems The band 1610-1645.5 MHz is identified for satellite component of IMT; Res.225 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372		Paired with 1593-1594 MHz for aeronautical public correspondence
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 5.374 5.375 5.376	**1 626.5-1 660 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz) Land Mobile satellite (1555 – 1559 MHz)	Paired with 1 626.5 – 1 660.5 MHz The bands 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for satellite component of IMT; Res.225 applies. In the band 1626.5-1645.5 MHz priority is given to maritime mobile distress, urgency and safety communications (GMDSS) ; Res.222 applies.
1 660-1 660.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	**1 660-1 660.5 MHz** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	GMDSS Maritime satellite (1 525 – 1 544 MHz) Mobile satellite (1544 – 1545 MHz) Aeronautical Mobile satellite (1545 – 1555 MHz)	Paired with 1 626.5 – 1 660.5 MHz The band 1610-1645.5 MHz and 1646.5-1660.5 MHz are identified for satellite component of IMT; Res.225 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149 5.341 5.351 5.354 5.376A	5.149 5.341 5.351 5.354 5.376A	Land Mobile satellite (1555 – 1559 MHz)	
1 660.5-1 668 MHz RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	**1 660.5-1 668 MHz** RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.341 5.379A		
1 668-1 668.4 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) 5.149 5.341 5.379A	IMT satellite component (1 668 – 1 675 MHz)	The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.
1 668.4-1 670 MHz METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile	**1 668.4-1 670 MHz** METEOROLOGICAL AIDS MOBILE except aeronautical mobile	Radiosonde (1 668 – 1 700 MHz)	The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	IMT satellite component (1 668 – 1 675 MHz)	
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 METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	Radiosonde (1 668 – 1 700 MHz) IMT satellite component (1 668 – 1 675 MHz)	The band 1668-1675 MHz is identified for satellite component of IMT; Res.225 applies.
1 675-1 690 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	**1 675-1 690 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Radiosonde (1 668 – 1 700 MHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.341	5.341		
1 690-1 700 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700 MHz** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341	Radiosonde (1 668 – 1 700 MHz)	Channels 1695.6938 MHz; 1695.7250 MHz; 1695.7562 MHz; 1695.7874 MHz; 1691 MHz and 1694.5 MHz
1 700-1 710 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710 MHz** METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341	Fixed links (single frequency)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 710-1 930 MHz	**1 710-1 930 MHz**		
FIXED	FIXED	FWA (1880 – 1900 MHz) FWA TDD (1900 – 1920 MHz) Fixed Broadband data applications (1 785 – 1 805 MHz)	Paired with BTX 1805 – 1880 MHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
MOBILE 5.384A 5.388A 5.388B	MOBILE 5.384A 5.388A NF9	IMT1800 MTX (1710 – 1785 MHz) Cordless telephones (1880 – 1900 MHz) IMT1900 TDD (1900 – 1920 MHz) IMT2100 MTX (1920 – 1980 MHz)	
		1 805-1 880 MHz IMT 1 920-1 980 MHz	Paired with 1710-1785 MHz IMT TDD applications Paired with BTX 2110 – 2170 MHz
		IMT (terrestrial)	Paired with 2110-2170 MHz
5.149 5.341 5.385 5.387 5.388	5.149 5.341 5.385 5.388		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
1 930-1 970 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 930-1 970 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT2100 MTX (1920 – 1980 MHz)	Paired with 2110 – 2170 MHz
1 970-1 980 MHz FIXED MOBILE 5.388A 5.388B 5.388	**1 970-1 980 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT2100 MTX (1920 – 1980 MHz)	Paired with 2110 – 2170 MHz
1 980-2 010 MHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	**1 980-2 010 MHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A NF13	Fixed links (1980 – 2010 MHz) CGC/ATC fixed systems (1980 – 2010 MHz) IMT-satellite IMT (satellite) (1980-2010 MHz)	Paired with 2170 – 2200 MHz) The development of satellites for IMT services to be monitored.
2 010-2 025 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 010-2 025 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT TDD (2010 – 2025 MHz)	IMT TDD applications Recommendation ITU-R M.1036
2 025-2 110 MHz SPACE OPERATION (Earth-to-space) (space-to-space)	**2 025-2 110 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	FIXED NF14 5.392	Fixed Links (2025 – 2110 MHz)	Paired with 2200 – 2285 MHz Radio Frequency channel arrangement according to ITU-R F.1098.
2 110-2 120 MHz FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	**2 110-2 120 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT2100 BTX (2110 – 2170 MHz)	Paired with 1920 – 1980 MHz Recommendation ITU-R M.1036
2 120-2 160 MHz FIXED MOBILE 5.388A 5.388B 5.388	**2 120-2 160 MHz** FIXED MOBILE 5.388A NF9 5.388	IMT-2100 BTX (2110 – 2170 MHz)	Paired with 1920 – 1980 MHz Recommendation ITU-R M.1036
2 160-2 170 MHz FIXED MOBILE 5.388A 5.388B	**2 160-2 170 MHz** FIXED MOBILE 5.388A NF9	IMT2100 BTX (2110 – 2170 MHz)	Paired with 1920 – 1980 MHz Recommendation ITU-R M.1036

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.388	5.388		
2 170-2 200 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	**2 170-2 200 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F NF13	Fixed Links (2170 – 2200 MHz) CGC/ATC fixed systems (1980 – 2010 MHz) IMT (satellite) (2170-2200 MHz)	Paired with 1980 – 2010 MHz
2 200-2 290 MHz SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) 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) FIXED NF14 MOBILE 5.391 5.392	TT&C received from space Fixed Links (2025 – 2110 MHz paired with 2200 – 2285) Fixed Links (2200 – 2285 MHz) BFWA (2 285-2 300 MHz)	Radio Frequency Channel arrangements in accordance with ITU-R F.1098 Paired with 2025 – 2110 MHz ITU-R Rec. F.1098 refers.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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)	Fixed Links, BFWA (2 285-2 300 MHz) (Coordination is expected prior to the implementation of these services)	
2 300-2 450 MHz FIXED MOBILE 5.384A Amateur Radiolocation 5.150 5.282 5.395	**2 300-2 450 MHz** FIXED MOBILE 5.384A NF9 Amateur 5.150 5.282	FWA (PTP/PTMP) (2307-2387 MHz) FWA (PTP/PTMP) (2401 – 2481 MHz) IMT2300 TDD (2300 – 2400 MHz) WLAN, FDDA and model ctrl. (2400 – 2483.5 MHz) Non-Specific SRDs and low power video surveillance (2400 – 2483.5 MHz) RFID (2 400 – 2 483.5 MHz) ISM applications (2400 – 2483.5 MHz)	Paired with 2401 – 2481 MHz 28 MHz channels OB links. Frequency co-ordination with other systems operating in the band is mandatory on a case-by-case basis. Primary basis: 2377 MHz and 2471 MHz Secondary basis: 2321 MHz, 2349 MHz, 2415 MHz and 2443 MHz Paired with 2307-2387 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Recommendation ITU-R M.1036

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
2 450-2 483.5 MHz FIXED MOBILE Radiolocation 5.150	**2 450-2 483.5 MHz** FIXED MOBILE Radiolocation 5.150	FWA (PTP/PTMP) (2401 – 2481 MHz) WLAN and RFID (2400 – 2483.5 MHz) Non-Specific SRDs and low power video surveillance (2400 – 2483.5 MHz) ISM applications (2400 – 2483.5 MHz)	Paired with 2307-2387 MHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
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	**2 483.5-2 500 MHz** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	Aeronautical Mobile Video surveillance MSS (2483.5 – 2500 MHz) 2400-2500 MHz Fixed links PTP/PTMP The band 2 400-2 500 MHz is designated for ISM applications (5.150). SRD applications (2 400-2 483.5 MHz)	Unmanned aerial vehicles only Some systems are paired with 1610 – 1626.5 MHz FS paired with 2300-2400 MHz The band 2483.5-2500 MHz is identified for satellite component of IMT; Res.225 applies. Common international SRD band; see ITU-R Rec. SM.1896

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.150 5.399 5.401 5.402	5.150 5.399 5.402		
2 500-2 520 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.412	**2 500-2 520 MHz** MOBILE except aeronautical mobile 5.384A NF9	IMT2600 MTX (2500 – 2570 MHz)	Paired with 2620 – 2690 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036
2 520-2 655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.412 5.418B 5.418C	**2 520-2 655 MHz** MOBILE except aeronautical mobile 5.384A NF9 5.339	IMT2600 MTX (2500 – 2570 MHz) IMT2600 TDD (2570 – 2620 MHz) IMT2600 BTX (2620 – 2690 MHz) IMT (2500-2690 MHz)	Paired with 2620 – 2690 MHz Paired with 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The band 2 500-2 690 MHz is also used for BFWA in some SADC countries

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
2 655-2 670 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 655-2 670 MHz** MOBILE except aeronautical mobile 5.384A NF9 Radio astronomy 5.149	IMT2600 BTX (2620 – 2690 MHz); IMT (2500-2690 MHz)	Paired with MTX 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036
2 670-2 690 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	**2 670-2 690 MHz** MOBILE except aeronautical mobile 5.384A Radio astronomy 5.149	IMT2600 MTX (2620 – 2690 MHz)	Paired with 2500 – 2570 MHz International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036
2 690-2 700 MHz	**2 690-2 700 MHz** RADIO ASTRONOMY		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	SPACE RESEARCH (passive) 5.340	Passive sensing	
2 700-2 900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	**2 700-2 900 MHz** AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423	Government Services	
2 900-3 100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	**2 900-3 100 MHz** RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427		
3 100-3 300 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	**3 100-3 300 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149		
3 300-3 400 MHz RADIOLOCATION	**3 300-3 400 MHz** RADIOLOCATION	Government Services	.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149 5.429 5.429A 5.429B 5.430	5.149 5.429A 5.429B	IMT Res. 223 (Rev.WRC-15)	Subject to outcome of the sharing and compatibility studies called for by Resolution 223 (WRC-15) currently underway within the ITU-R, there might be a need to migrate Radars out of this band. This will be addressed through an update of the migration plan.
3 400-3 600 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.430A Radiolocation 5.431	**3 400-3 600 MHz** FIXED MOBILE 5.430A NF9	IMT3500 TDD (3400 – 3600 MHz)	International Mobile Telecommunication Roadmap (GG No.38213) 14 November 2014. Radio Frequency Assignment Plan (GG N. 38640) as amended 30 March 2015. Recommendation ITU-R M.1036 The band 3400 -3600 MHz is also used for BFWA in some SADC countries
3 600-4 200 MHz FIXED FIXED-SATELLITE (space-to-Earth)	**3 600-4 200 MHz** FIXED FIXED-SATELLITE (space-to-Earth)	Fixed links (4 GHz) (3600 – 4200 MHz)	The sub-band 3 600-3 800 MHz could be used for BFWA where

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Mobile	NF14	C-band downlink (VSAT/SNG/PTP links)	frequency sharing with FS PTP and/or FSS is feasible. The channelling arrangement for PTP links in this band is based on ITU-R Recommendation F.635 Annex 1. The sub-band 3 600-4 200 MHz is used for medium and high capacity PTP links and FSS. In the band 3 600-3 800 MHz, FS PTP and FSS applications will have to operate on coordinated basis.
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 onboard aircraft Radars	
4 400-4 500 MHz FIXED MOBILE	**4 400-4 500 MHz** FIXED NF14 MOBILE	 Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast links Electronic News Gathering	
4 500-4 800 MHz FIXED	**4 500-4 800 MHz** FIXED NF14		 Appendix 30B Plan

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast links Electronic News Gathering	The band 4 500-4 800 MHz is part of the APP30B Plan (FSS space-to-Earth). Refer to Annex B.
4 800-4 990 MHz FIXED MOBILE 5.440A 5.442 Radio astronomy 5.149 5.339 5.443	**4 800-4 990 MHz** FIXED NF14 MOBILE 5.442 Radio astronomy 5.149 5.339 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast Links Electronic News Gathering Radio astronomy on 4825 – 4835 MHz and 4950 – 4990 MHz	
4 990-5 000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	**4 990-5 000 MHz** FIXED NF14 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 NF15	Fixed links (4.8 GHz) (4400 – 5000 MHz) Government services Outside Broadcast links Electronic News Gathering	
5 000-5 010 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION	**5 000-5 010 MHz** AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIONAVIGATION-SATELLITE (Earth-to-space)	RADIONAVIGATION-SATELLITE (Earth-to-space)		
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 System	
5 091-5 150 MHz FIXED-SATELLITE (Earth-to-space) 5.444A	**5 091-5 150 MHz** FIXED-SATELLITE (Earth-to-space) 5.444A		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.444	NGSO MSS feeder links (5091 – 5150 MHz)	
5 150-5 250 MHz AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C 5.447 5.447B 5.447C	**5 150-5 250 MHz** AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C 5.447B 5.447C	NGSO MSS feeder links (5091 – 5150 MHz) WAS / RLAN (5150 – 5350 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5 250-5 255 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F	**5 250-5 255 MHz** SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F	WAS / RLAN (5150 – 5350 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.447E 5.448 5.448A	5.448A		
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	WAS / RLAN (5150 – 5350 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
5 350-5 460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	**5 350-5 460 MHz** EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D		
5 460-5 470 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	**5 470-5 570 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B	WAS / RLAN (5470 – 5725 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
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	Location Radar Ground based meteorological radars (5600 – 5650 MHz) WAS / RLAN (5470 – 5725 MHz) Weather Radars (5600 – 5650 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
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	WAS / RLAN (5470 – 5725 MHz) (indoor use only)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Fixed NF16 5.150	Fixed links (5725 – 5850 MHz) RTT data (5795 – 5815 MHz) ISM applications (5725 – 5875 MHz) BFWA (5725-5850 MHz) ISM (5725-5875 MHz) RTTT (Road Transport and Traffic Telematics) (5795-5815 MHz) SRD applications (5 725-5 875 MHz) SRD - Transport and information control systems (5 805-5 815 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). . BFWA in some SADC countries is limited to below 5850 MHz in order to protect FSS in the band 5850-6425 MHz Common international SRD band; see ITU-R Rec. SM.1896 Transport information and control systems Recommendation ITU-R M.1453
5 830-5 850 MHz FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)	**5 830-5 850 MHz** FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)	Fixed links BFWA (5725 – 5850 MHz) ISM applications (5725 – 5875 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 3417238641, 3130 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.150 5.451 5.453 5.455	Fixed NF16 5.150		BFWA in some SADC countries is limited to below 5850 MHz in order to protect FSS in the band 5850-6425 MHz
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	C-band uplink (VSAT/SNG/PTP links) ISM applications (5725 – 5875 MHz) Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) FIXED links (5850-5925 MHz) ISM (5725-5875 MHz)	FS could be used for temporary OB links.
5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C	**5 925-6 700 MHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz), BFWA Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) ESVs (5925 – 6425 MHz)	Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383. Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384. Earth Station onboard vessels (ESV) also allowed under FSS.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149 5.440 5.458	5.149 5.440 5.458		
6 700-7 075 MHz FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B	**6 700-7 075 MHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 5.458 5.458A 5.458B	Fixed Links (U6) (6425 – 7110 MHz) S-DAB feeder links (uplinks) Fixed links - Upper 6 GHz (6425-7110 MHz)	Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384. The band 6 725-7 025 MHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B.
7 075-7 145 MHz FIXED MOBILE 5.458 5.459	**7 075-7 145 MHz** FIXED NF14 5.458	Fixed Links (U6) (6425 – 7110 MHz) Fixed Links (L7) (7110 – 7425 MHz) Fixed links - Upper 6 GHz (6425-7110 MHz) and Lower 7 GHz (7110-7425 MHz)	Channelling plan for U6 band in accordance with ITU-R Rec. F.384. Channelling plan for L7 band is in accordance with ITU-R Rec. F.385 Annex 3.
7 145-7 190 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	7 145-7 190 MHz FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459	Fixed links - Lower 7 GHz (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 190-7 235 MHz	**7 190-7 235 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED NF14 SPACE RESEARCH (Earth-to-space) 5.460 5.458	Fixed Links (L7) (7110 – 7425 MHz)	
7 235-7 250 MHz EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED MOBILE 5.458	**7 235-7 250 MHz** FIXED NF14 5.458	Fixed links - Lower 7 GHz (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 250-7 300 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	**7 250-7 300 MHz** FIXED NF14 5.461	Fixed links - Lower 7 GHz (7110-7425 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 300-7 375 MHz	**7 300-7 375 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile **5.461**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile **5.461**	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3. Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 375-7 450 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) 5.461AA 5.461AB	**7 375-7 450 MHz**FIXED NF14 FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE SATELLITE (space-to-Earth) 5.461AA 5.461AB	Fixed links - Lower 7 GHz (7110-7425 MHz) and Upper 7 GHz (7425-7750 MHz)	Channelling plan for L7 band in accordance with ITU-R Rec. F.385 Annex 3. Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 450-7 550 MHz FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	**7 450-7 550 MHz** FIXED NF14 METEOROLOGICAL-SATELLITE (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB	Fixed links - Upper 7 GHz (7425-7750 MHz)	Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461A	5.461A		
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	**7 550-7 750 MHz** FIXED NF14 MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB	Fixed links - Upper 7 GHz (7425-7750 MHz)	Channelling plan for U7 band in accordance with ITU-R Rec. F.385 Annex 3.
7 750-7 900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	**7 750-7 900 MHz** FIXED NF14 METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B	Fixed Links (L8) (7725 – 8275 MHz) Fixed links - Lower 8 GHz (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 1.
7 900-8 025 MHz	**7 900-8 025 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	FIXED NF14 5.461	Fixed Links (L8) (7725 – 8275 MHz) Fixed links - Lower 8 GHz (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 1.
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 NF14 5.462A	Fixed Links (L8) (7725 – 8275 MHz) Fixed links - Lower 8 GHz (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 1.
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 NF14 METEOROLOGICAL-SATELLITE (Earth-to-space) 5.462A	Fixed Links (L8) (7725 – 8275 MHz) Fixed links - Lower 8 GHz (7725-8275 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 1.

CONTINUES ON PAGE 386 - PART 4

Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID AFRIKA

Vol. 635 25 May Mei 2018 No. 41650

PART 4 OF 8

ISSN 1682-5843

9 771682 584003 41650

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 NF14 5.462A	Fixed Links (L8) (7725 – 8275 MHz) Fixed Links (U8) (8275 – 8500 MHz) Fixed links - Lower 8 GHz (7725-8275 MHz) and Upper 8 GHz (8275-8500 MHz)	Channelling plan for L8 band in accordance with ITU-R Rec. F.386 Annex 1. Channelling plan for U8 band in accordance with ITU-R Rec. F.386 Annex 1.
8 400-8 500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465	**8 400-8 500 MHz** FIXED NF14 SPACE RESEARCH (space-to-Earth) 5.465	Fixed Links (U8) (8275 – 8500 MHz) Fixed links - Upper 8 GHz (8275-8500 MHz)	Channelling plan for U8 band in accordance with ITU-R Rec. F.386 Annex 1.
8 500-8 550 MHz RADIOLOCATION 5.468 5.469	**8 500-8 550 MHz** RADIOLOCATION	RADARS. aeronautical radio navigation e.g. precision airfield approach radars.	
8 550-8 650 MHz	**8 550-8 650 MHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	ARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A	RADARS. aeronautical radionavigation e.g. precision airfield approach radars	
8 650-8 750 MHz RADIOLOCATION 5.468 5.469	**8 650-8 750 MHz** RADIOLOCATION	RADARS. aeronautical radio navigation e.g. precision airfield approach radars	
8 750-8 850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	**8 750-8 850 MHz** RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470	RADARS. aeronautical radionavigation e.g. precision airfield approach radars	
8 850-9 000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	**8 850-9 000 MHz** RADIOLOCATION MARITIME RADIONAVIGATION 5.472	RADARS. aeronautical radionavigation e.g. precision airfield approach radars	
9 000-9 200 MHz AERONAUTICAL RADIONAVIGATION 5.337	**9 000-9 200 MHz** AERONAUTICAL RADIONAVIGATION 5.337	Approach radars	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIOLOCATION 5.471 5.473A	RADIOLOCATION 5.473A	RADARS. aeronautical radionavigation e.g. precision airfield approach radars	
9 200-9 300 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	**9 200-9 300 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474 5.474D	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) Harbour radars RADARS. aeronautical radionavigation e.g. precision airfield approach radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
9 300-9 500 MHz RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475 5.475A 5.475B 5.476A	**9 300-9 500 MHz** RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 5.475 5.475A 5.475B 5.476A	Shore based radars (9380 – 9440 MHz) Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
9 800-9 900 MHz RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	**9 800-9 900 MHz** RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.478A 5.478B	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
9 900-10 000 MHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed	**9 900-10 000 MHz** EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION	Field Disturbance and Doppler Apparatus (9200 – 9975 MHz) RADARS. aeronautical radionavigation e.g. precision airfield approach radars	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.474D 5.477 5.478 5.479	5.474D 5.479		
10-10.4 GHz EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4 GHz** EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED NF14 MOBILE RADIOLOCATION Amateur 5.474D 5.479		
10.4-10.45 GHz FIXED MOBILE RADIOLOCATION Amateur	**10.4-10.45 GHz** FIXED NF14 RADIOLOCATION	Low power video links (10.0 – 10.15 GHz) BFWA (10.15 – 10.3 GHz) Motion sensors BFWA – 10.5 GHz (10.15-10.30 GHz)	Paired with 10.50-10.65 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1.
10.45-10.5 GHz RADIOLOCATION Amateur Amateur-satellite 5.481	**10.45-10.5 GHz** RADIOLOCATION	Radars Motion Sensors	
10.5-10.55 GHz	**10.5-10.55 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED MOBILE Radiolocation	FIXED NF14 MOBILE Radiolocation	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (Video connections) (10.5 – 10.68 GHz) FDDA (10.5 – 10.6 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Paired with 10.15-10.30 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1.
10.55-10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation	**10.55-10.6 GHz** FIXED NF14 Radiolocation	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (video connections) (10.5 – 10.68 GHz) FDDA (10.5 – 10.6 GHz)	Paired with 10.15 – 10.3 GHz Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Paired with 10.15-10.30 GHz Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1
10.6-10.68 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile	**10.6-10.68 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 RADIO ASTRONOMY	BFWA (10.5 – 10.65 GHz) SAP/SAB Applications (video connections) (10.5 – 10.68 GHz)	Paired with 10.15 – 10.3 GHz Paired with 10.15-10.30 GHz

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	Motion sensors	Channelling plan for 10.5 GHz band in accordance with ITU-R Rec. F.1568 Annex 1. For sharing between EESS (passive) and the fixed and mobile service Res.751 applies.
10.68-10.7 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	**10.68-10.7 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
10.7-10.95 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		This band is used for Fixed links (11 GHz) (10.7-11.7 GHz). The channeling plan for FS Links are in accordance with ITU-R Rec.F387. The band is also available for FSS Planned services (see Appendix 30B). The band can also be used for BSS feeder links (see 5.484).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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		This band is used for Fixed links (11 GHz) (10.7-11.7 GHz). The channeling plan for FS Links are in accordance with ITU-R Rec.F387. This band is also used for FSS (downlink) (VSAT/SNG/BSS feeder links). The band can also be used for BSS feeder links (see 5.484).
11.2-11.45 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	**11.2-11.45 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile		This band is used for Fixed links (11 GHz) (10.7-11.7 GHz). The channeling plan for FS Links are in accordance with ITU-R Rec.F387. The band is also available for FSS Planned services (see Appendix 30B). The band can also be used for BSS feeder links (see 5.484).
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 NF14 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) Ku-band downlink (VSAT/SNG/BSS feeder links Fixed links - 11 GHz (10.7-11.7 GHz)	This band is used for Fixed links (11 GHz) (10.7-11.7 GHz). The channeling plan for FS Links are in accordance with ITU-R Rec.F387.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
		Fixed-satellite downlinks (PTP/VSAT/SNG),	This band is also used for FSS (downlink) (VSAT/SNG/BSS feeder links). The band can also be used for BSS feeder links (see 5.484).
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	 OB links ENG BSS feeder links	 Appendix 30 Plan This band is available for BSS in accordance with Appendix 30 of ITU RR. Refer to Annex B.
12.5-12.75 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 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) 5.495		
12.75-13.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	**12.75-13.25 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.441	 Fixed Links (13 GHz) (12.75 – 13.25 GHz)	 Appendix 30B Plan Channelling plan for 13 GHz band in accordance with ITU-R Rec. F.497.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
			The band 12.75-13.25 GHz is part of the APP30B Plan (FSS Earth-to-space); refer to Annex B.
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	
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) 5.499 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) 5.499 5.499E 5.500 5.501 5.501B		
13.65-13.75 GHz EARTH EXPLORATION-SATELLITE (active)	**13.65-13.75 GHz**	FDDA (13.4 – 14 GHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	RADIOLOCATION 5.501B	RADIOLOCATION	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
13.75-14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	**13.75-14 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION 5.502 5.503	Ku-band uplink (VSAT/SNG/FSS feeder links) FDDA (13.4 – 14 GHz) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) RADIOLOCATION	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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 5.484A 5.484B 5.506 5.506B NF17 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A 5.504A	Ku-band uplink (VSAT/SNG/FSS feeder links) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz)	Earth Station onboard vessels (ESV) also allowed under FSS; Res. 902 applies. The band 14.0-14.5 GHz may also be used for AES (aircraft-to-space station).
14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	**14.25-14.3 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B NF17 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.504A	Ku-band uplink (VSAT/SNG/FSS feeder links) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz)	Earth Station onboard vessels (ESV) also allowed under FSS; Res. 902 applies. The band 14.0-14.5 GHz may also be used for AES (aircraft-to-space station).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
14.3-14.4 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 Radionavigation-satellite 5.504A	**14.3-14.4 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B NF17 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A 5.504A	Ku-band uplink (VSAT/SNG/FSS feeder links) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz)	Earth Station on board vessels (ESV) also allowed under FSS; Res. 902 applies. The band 14.0-14.5 GHz may also be used for AES (aircraft-to-space station).
14.4-14.47 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	**14.4-14.47 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B NF17 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A 5.504A	Ku-band uplink (VSAT/SNG/FSS feeder links) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz)	Earth Station onboard vessels (ESV) also allowed under FSS; Res. 902 applies. The band 14.0-14.5 GHz may also be used for AES (aircraft-to-space station).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
14.47-14.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	**14.47-14.5 GHz** FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B NF17 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Radio astronomy 5.149 5.504A	Ku-band uplink (VSAT/SNG/FSS feeder links) FSS uplinks (PTP/VSAT/SNG) (13.75-14.5 GHz) ESVs (14 -14.5 GHz)	Earth Station onboard vessels (ESV) also allowed under FSS; Res. 902 applies. The band 14.0-14.5 GHz may also be used for AES (aircraft-to-space station).
14.5-14.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G	**14.5-14.75 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 ITU-R Rec. F.636. The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some SADC countries. Refer to Annex B.
14.75-14.8 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G	**14.5-14.8 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.510	Fixed Links (15 GHz) (14.5 – 15.35 GHz) BSS feeder links Fixed links - 15 GHz (14.5-15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
			The band 14.5-14.8 GHz is part of the APP30A Plan (Feeder Links for BSS) for some SADC countries. Refer to Annex B.
14.8-15.35 GHz FIXED MOBILE Space research 5.339	**14.8-15.35 GHz** FIXED NF14 5.339	Fixed Links (15 GHz) (14.5 – 15.35 GHz)	Channelling plan for 15 GHz band in accordance with ITU-R Rec. F.636. .
15.35-15.4 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	**15.35-15.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	Very long base inferometry Observations Passive sensing	
15.4-15.43 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.4-15.43 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	Radio Altimeters Radars	ICAO: ASDE Annex 10
15.43-15.63 GHz	**15.43-15.63 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	Radio Altimeters Radars	ICAO: ASDE Annex 10
15.63-15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	**15.63-15.7 GHz** RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	Radio Altimeters Radars	ICAO: ASDE Annex 10
15.7-16.6 GHz RADIOLOCATION 5.512 5.513	**15.7-16.6 GHz** RADIOLOCATION	Government Services	Altimeters / Distance measuring equipment
16.6-17.1 GHz RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	**16.6-17.1 GHz** RADIOLOCATION Space research (deep space) (Earth-to-space)		
17.1-17.2 GHz	**17.1-17.2 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIOLOCATION 5.512 5.513	RADIOLOCATION	WAS / RLAN	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
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) 5.513A	WAS / RLAN	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).
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		The band 17.3-17.7 GHz is part of the APP30A Plan (Feeder Links for BSS) for many SADC countries; refer to Annex B. The band 17.3-17.7 GHz is identified for HDFSS; Res.143 applies.
17.7-18.1 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516	**17.7-18.1 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516	Fixed Links (18 GHz) (17.7 – 19.7 GHz) BSS Feeder Links	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE			
18.1-18.4 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521	**18.1-18.4 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 5.519	Fixed Links (18 GHz) (17.7 – 19.7 GHz) BSS Feeder Links	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1.
18.4-18.6 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE	**18.4-18.6 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	Fixed Links (18 GHz) (17.7 – 19.7 GHz)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1.
18.6-18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B	**18.6-18.8 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.522B	Fixed Links (18 GHz) (17.7 – 19.7 GHz)	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	Space research (passive) 5.522A	Passive Sensing	
18.8-19.3 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE	**18.8-19.3 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) 5.523A	Fixed Links (18 GHz) (17.7 – 19.7 GHz)	
19.3-19.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	**19.3-19.7 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E	Fixed Links (18 GHz) (17.7 – 19.7 GHz) BSS Feeder Links	Channelling plan for 18 GHz band in accordance with ITU-R Rec. F.595 Annex 1.
19.7-20.1 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A	GSO/FSS	The band 19.7-20.2 GHz is identified for HDFSS; Res.143 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
20.1-20.2 GHz FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	**20.1-20.2 GHz** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A 5.525 5.526 5.527 5.528		The band 19.7-20.2 GHz is identified for HDFSS; Res.143 applies.
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	**20.2-21.2 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth)		
21.2-21.4 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	**21.2-21.4 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 SPACE RESEARCH (passive)	Passive Sensing Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
21.4-22 GHz FIXED	**21.4-22 GHz** FIXED NF14		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530D	MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530D	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3. The use of BSS in this band is subject to the provisions of WRC - 15 Resolutions .552, 553 and 555.
22-22.21 GHz FIXED MOBILE except aeronautical mobile 5.149	**22-22.21 GHz** FIXED NF14 MOBILE except aeronautical mobile 5.149	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
22.21-22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	**22.21-22.5 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz) Passive Sensing	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
22.5-22.55 GHz	**22.5-22.55 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED MOBILE	FIXED NF14 MOBILE	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
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 NF14 SPACE RESEARCH (Earth-to-space) 5.532A 5.149	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links – 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
23.15-23.55 GHz FIXED INTER-SATELLITE 5.338A MOBILE	**23.15-23.55 GHz** FIXED NF14	Fixed Links (23 GHz) (21.2 – 23.6 GHz)	
23.55-23.6 GHz FIXED MOBILE	**23.55-23.6 GHz** FIXED NF14	Fixed Links (23 GHz) (21.2 – 23.6 GHz) Fixed links - 23 GHz (21.2-23.6 GHz or 22.0-23.6 GHz)	Channelling plan for 23 GHz band in accordance with ITU-R Rec. F.637 Annex 1 or Annex 3.
23.6-24 GHz	**23.6-24 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing	
24-24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	**24-24.05 GHz** AMATEUR AMATEUR-SATELLITE 5.150	Non-specific SRDs (24-24.25 GHz) AMATEUR AMATEUR-SATELLITE ISM (24.0-24.25 GHz) SRD applications (24-24.25 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896
24.05-24.25 GHz RADIOLOCATION Amateur Earth exploration-satellite (active)	**24.05-24.25 GHz** RADIOLOCATION Amateur Earth exploration-satellite (active)	FDDA (24.05 – 24.25 GHz) Non-specific SRDs (24-24.25 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.150	5.150		The band 24.0-24.25 GHz is designated for ISM applications (5.150).
24.25-24.45 GHz FIXED	**24.25-24.45 GHz** FIXED		Temporary fixed links for ENG/OB
24.45-24.65 GHz FIXED INTER-SATELLITE	**24.45-24.65 GHz** FIXED NF14	Fixed Links (26 GHz) (24.5 – 26.5 GHz) Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
24.65-24.75 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE	**24.65-24.75 GHz** FIXED NF14	Fixed Links (26 GHz) (24.5 – 26.5 GHz) Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
24.75-25.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.532B	**24.75-25.25 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.532B	Fixed Links (26 GHz) (24.5 – 26.5 GHz) Fixed links - 26 GHz (24.5-26.5 GHz) BFWA (24.5-26.5 GHz)	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
25.25-25.5 GHz	**25.25-25.5 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	FIXED NF14	Fixed Links (26 GHz) (24.5 – 26.5 GHz) BFWA (24.5-26.5 GHz	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
25.5-27 GHz EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	**25.5-27 GHz** EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED NF14 5.536A	National Polar-Orbiting Operational Environment Satellite System (NPOESS) Fixed Links (26 GHz) (24.5 – 26.5 GHz) BFWA (24.5-26.5 GHz	Channelling plan for 26 GHz band in accordance with ITU-R Rec. F.748 Annex 1.
27-27.5 GHz FIXED INTER-SATELLITE 5.536 MOBILE	**27-27.5 GHz** FIXED		
27.5-28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539	**27.5-28.5 GHz** FIXED 5.537A NF14 NF18 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539	Fixed Links (28 GHz) (27.5 – 29.5 GHz), LMDS (27.5 – 28.35) Base to Subscriber	LMDS (31.000 – 31.300 MHz) Subscriber to Base

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE 5.538 5.540	 5.538 5.540		Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2. The band 27.5-27.82 GHz is identified for HDFSS; Res.143 applies. The band 27.5-30 GHz may be used by the FSS for BSS feeder links.
28.5-29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**28.5-29.1 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 5.540	Fixed Links (28 GHz) (27.5 – 29.5 GHz)	Channelling plan for 28 GHz band in accordance with ITU-R Rec. F.748 Annex 2. The band 28.45-28.94 GHz is identified for HDFSS; Res.143 applies. The band 27.5-30 GHz may be used by the FSS for BSS feeder links.
29.1-29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	**29.1-29.5 GHz** FIXED NF14 NF18 FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A 5.540	Fixed Links (28 GHz) (27.5 – 29.5 GHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 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 5.527A 5.539 5.540		The band 29.46-30.0 GHz is identified for HDFSS; Res.143 applies.
29.9-30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 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	**29.9-30 GHz** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 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		
30-31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	**30-31 GHz** FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space)		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
31-31.3 GHz FIXED 5.338A 5.543A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	**31-31.3 GHz** FIXED 5.338A NF18 5.149	 31.000 – 31.300 GHz (local multipoint distribution services (LMDS) –subscriber to Base station)	 Paired with 27.5 – 28.35 GHz (base station to subscriber)
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 5.340		
31.5-31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	**31.5-31.8 GHz** RADIO ASTRONOMY SPACE RESEARCH (passive) FIXED 5.546 MOBILE except aeronautical mobile 5.546 5.149	 Passive Sensing	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
31.8-32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	**31.8-32 GHz** FIXED 5.547A NF14 RADIONAVIGATION 5.547 5.548	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1. The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.
32-32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	**32-32.3 GHz** FIXED 5.547A NF14 RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1. The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.
32.3-33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548	**32.3-33 GHz** FIXED 5.547A NF14 INTER-SATELLITE RADIONAVIGATION 5.547 5.548	HDFS (31.8 – 33.4 GHz)	Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1. The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.
33-33.4 GHz FIXED 5.547A	**33-33.4 GHz** FIXED 5.547A NF14	HDFS (31.8 – 33.4 GHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIONAVIGATION 5.547	RADIONAVIGATION 5.547		Channelling plan for 32 GHz band in accordance with ITU-R Rec. F.1520 Annex 1. The band 31.8-33.4 GHz is identified for HDFS; Res.75 applies.
33.4-34.2 GHz RADIOLOCATION 5.549	**33.4-34.2 GHz** RADIOLOCATION	Government Services	
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)	Government Services	
34.7-35.2 GHz RADIOLOCATION Space research 5.550 5.549	**34.7-35.2 GHz** RADIOLOCATION Space research 5.550	Government Services	
35.2-35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION	**35.2-35.5 GHz** METEOROLOGICAL AIDS RADIOLOCATION	Government Services	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.549			
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) 5.549A	Government Services	
36-37 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	**36-37 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	Government Services Passive Sensing	
37-37.5 GHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.547	**37-37.5 GHz** FIXED NF14 SPACE RESEARCH (space-to-Earth) 5.547	Fixed Links (38 GHz) (37.0 – 39.5 GHz)	
37.5-38 GHz FIXED	**37.5-38 GHz** FIXED NF14	Fixed Links (38 GHz) (37.0 – 39.5 GHz)	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547		The band 37-40 GHz is identified for HDFS; Res.75 applies. Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1.
38-39.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	**38-39.5 GHz** FIXED NF14 Earth exploration-satellite (space-to-Earth) 5.547	Fixed Links (38 GHz) (37.0 – 39.5 GHz)	Channelling plan for 38 GHz band in accordance with ITU Rec. F.749 Annex 1. The band 37-40 GHz is identified for HDFS; Res.75 applies.
39.5-40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	**39.5-40 GHz** FIXED FIXED-SATELLITE (space-to-Earth) 5.516B Earth exploration-satellite (space-to-Earth) 5.547		The band 37-40 GHz is identified for HDFS; Res.75 applies. The band 39.5-40 GHz is identified for HDFSS; Res.143 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
40-40.5 GHz EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	**40-40.5 GHz** EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	Government Services	The band 40-40.5 GHz is identified for HDFSS; Res.143 applies.
40.5-41 GHz FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	**40.5-41 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547		BFWA or MWS (40.5-43.5 GHz). The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies.
41-42.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE	**41-42.5 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE		BFWA or MWS (40.5-43.5 GHz).

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Mobile 5.547 5.551F 5.551H 5.551I	 5.547 5.551F 5.551H 5.551I		The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies.
42.5-43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547 5.551H	**42.5-43.5 GHz** FIXED NF14 FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547 5.551H	Government Services (43.5-45.5 GHz)	BFWA or MWS (40.5-43.5 GHz). The band 40.5-43.5 GHz is identified for HDFS; Res.75 applies.
43.5-47 GHz MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**43.5-47 GHz** MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
47-47.2 GHz AMATEUR AMATEUR-SATELLITE	**47-47.2 GHz** AMATEUR AMATEUR-SATELLITE	Amateur Amateur satellite	
47.2-47.5 GHz FIXED	**47.2-47.5 GHz** FIXED		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A	FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		
47.5-47.9 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE	**47.5-47.9 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE	The band 47.5-47.9 GHz is identified for HDFSS; Res.143 applies.	
47.9-48.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A	**47.9-48.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		
48.2-48.54 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**48.2-48.54 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		The band 48.2-48.54 GHz is identified for HDFSS; Res.143 applies.
48.54-49.44 GHz	**48.54-49.44 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555		
49.44-50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	**49.44-50.2 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		The band 49.44-50.2 GHz is identified for HDFSS; Res.143 applies.
50.2-50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	**50.2-50.4 GHz** EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		
50.4-51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-satellite (Earth-to-space)	**50.4-51.4 GHz** FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-satellite (Earth-to-space)		
51.4-52.6 GHz	**51.4-52.6 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED 5.338A MOBILE 5.547 5.556	FIXED 5.338A MOBILE 5.547 5.556		The band 51.4-52.6 GHz is identified for HDFS; Res.75 applies.
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)	**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	**55.78-56.9 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A NF14 INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz)	The band 55.78-59 GHz is identified for HDFS; Res.75 applies.
56.9-57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED	**56.9-57 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14		The band 55.78-59 GHz is identified for HDFS; Res.75 applies.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz)	
57-58.2 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	**57-58.2 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED NF14 INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	Passive Sensing (53.6 – 59.3 GHz)	The band 55.78-59 GHz is identified for HDFS; Res.75 applies. Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016).
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 NF14 MOBILE SPACE RESEARCH (passive) 5.547 5.556		The band 55.78-59 GHz is identified for HDFS; Res.75 applies. Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016.
59-59.3 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558	**59-59.3 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558		Radio Frequency Spectrum Regulations Amendments, (Government Gazette Number 40436, 22 November 2016

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIOLOCATION 5.559 SPACE RESEARCH (passive)	RADIOLOCATION 5.559 SPACE RESEARCH (passive)	Passive Sensing (53.6 – 59.3 GHz)	
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	Government Services	Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016 The band 61-61.5 GHz is designated for ISM applications (5.138). The band 59 - 61 GHz reserved for government use. Common international SRD band; see ITU-R RecSM. 1896
64-65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	**64-65 GHz** FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556		The band 64-66 GHz is identified for HDFS; Res.75 applies. Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016.
65-66 GHz	**65-66 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547		The band 64-66 GHz is identified for HDFS; Res.75 applies. Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016
66-71 GHz INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	**66-71 GHz** INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
71-74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	**71-74 GHz** FIXED NF14 FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	Fixed Links (80 GHz) (71 – 76 GHz) Government use Fixed links (71-76 GHz)	Paired with 81 – 86 GHz. Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016)
74-76 GHz FIXED	**74-76 GHz** FIXED NF14		Paired with 81 – 86 GHz.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	Fixed Links (80 GHz) (71 – 76 GHz)	Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016)
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	RTTT (76 – 77 GHz) SRD - Road Transport and Traffic Telematics Radar (76 – 77 GHz)	Radio Frequency Spectrum Regulations as amended (Annex B) (GG. No. 38641, 30 March 2015). Common international SRD band; see ITU-R Rec. SM.1896 and Rec. M.1452
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		
78-79 GHz RADIOLOCATION Amateur	**78-79 GHz** RADIOLOCATION Amateur		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560		
79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	**79-81 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149		
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 NF14 FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	Fixed Links (80 GHz) (81 –86 GHz)	Paired with 71 – 76 GHz. Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016)
84-86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE	**84-86 GHz** FIXED 5.338A NF14 FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE	Fixed Links (80 GHz) (81 –86 GHz)	Radio Frequency Spectrum Regulations Amendments (Government Gazette Number 40436, 22 November 2016)

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIO ASTRONOMY 5.149	RADIO ASTRONOMY 5.149		
86-92 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**86-92 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		
92-94 GHz FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**92-94 GHz** FIXED 5.338A NF14 MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
94-94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	**94-94.1 GHz** EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	Short Range Radar. Cloud profile radar.	
94.1-95 GHz FIXED MOBILE	**94.1-95 GHz** FIXED NF14 MOBILE		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIO ASTRONOMY RADIOLOCATION 5.149	RADIO ASTRONOMY RADIOLOCATION 5.149	Short Range Radar	
95-100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**95-100 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554		
100-102 GHz 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	Passive sensing	
102-105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	**102-105 GHz** FIXED MOBILE RADIO ASTRONOMY 5.149 5.341		
105-109.5 GHz	**105-109.5 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341		
109.5-111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	**109.5-111.8 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Passive Sensing	
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		
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		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Passive Sensing	
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	Passive Sensing (114.25 – 122.25 GHz)	
122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	**122.25-123 GHz** FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138		
123-130 GHz FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION	**123-130 GHz** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554		
130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	**130-134 GHz** EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A		
134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy		
136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149	**136-141 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149		
141-148.5 GHz FIXED	**141-148.5 GHz** FIXED		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**148.5-151.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing	
151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	**151.5-155.5 GHz** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
155.5-158.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G	**155.5-158.5 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G	Passive Sensing	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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	Passive Sensing	
167-174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	**167-174.5 GHz** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D		
174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	**174.5-174.8 GHz** FIXED INTER-SATELLITE MOBILE 5.558		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
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)	Passive sensing (174.8 – 191.8 GHz)	
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	Passive sensing (174.8 – 191.8 GHz)	
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)	Passive sensing (174.8 – 191.8 GHz)	
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	Passive sensing (174.8 – 191.8 GHz)	
191.8-200 GHz FIXED	**191.8-200 GHz** FIXED		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554		
200-209 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	**200-209GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	Passive sensing.	
209-217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	**209-217 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341		
217-226 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	**217-226 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
SPACE RESEARCH (passive) 5.562B 5.149 5.341	SPACE RESEARCH (passive) 5.562B 5.149 5.341		
226-231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	**226-231.5 GHz** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing (226 – 232 GHz)	
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) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)	**235-238 GHz** EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)	Passive Sensing	

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.563A 5.563B	5.563A 5.563B		
238-240 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	**238-240 GHz** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240-241 GHz FIXED MOBILE RADIOLOCATION	**240-241 GHz** FIXED MOBILE RADIOLOCATION		
241-248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	**241-248 GHz** RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149		
248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	**248-250 GHz** AMATEUR AMATEUR-SATELLITE Radio astronomy		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5.149	5.149		
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	Passive Sensing	
252-265 GHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	**252-265 GHz** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554		
265-275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	**265-275 GHz** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A		
275-3 000 GHz	**275-1 000 GHz**		

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
(Not allocated) 5.565	(Not allocated) 5.565	Radio astronomy service Earth exploration-satellite service (passive) Space research (passive)	
	1 000-3 000 GHz (Not allocated) 5.565		Assignments may be considered for Amateur services on a secondary basis above 1000 GHz

4 Radio Astronomy

The Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) (AGAA) provides for the Minister responsible for Science and Technology to declare any area or part of an area in the Province of the Northern Cape (except Sol Plaatjie Municipal area) as an astronomy advantage area (AAA). AAA's must be protected, amongst others, from harmful radio frequency interference, which may be caused by radio communication services. The Square Kilometre Array (SKA) will be built in the Northern Cape Province. The SKA location, frequencies bands to be protected, protection levels, coordination procedures, etc. are prescribed through regulations. The band 100 MHz to 25.5 GHz are earmarked for the SKA.

Radiocommunications with transmitters located within the AAA's, which operate within the radio frequency range/s identified for radio astronomy purposes will be subjected to the provisions of the AGAA. All transmitters located, or to be located, within the AAA's will be subject to authorisation according to the prescribed processes. Where authorisation has been granted in accordance with the prescribed procedures, a prospective licensee is still required to submit a spectrum application form for consideration by ICASA.

Where a licensee is required to move its electronic communications facility or migrate to an alternative radio frequency band, ICASA will consult and agree with the licensee regarding the reasonable period within which the licensee must cease to operate its electronic communications facility and migrate to an alternative band.

5 National Footnotes to the Table of Frequency Allocations

NF0 (5350 - 5450 KHz)

The band 5350 – 5450KHz and the channel 5290KHz is allocated on secondary basis to radio amateurs under the Article 4.4 of the ITU Radio Regulations.

NF1 (29.7 - 30 MHz)

This portion of the spectrum is allocated to the amateur service on a secondary basis for use during disaster exercises and emergency situations. This is in addition to the existing exclusive amateur band 28 - 29.7 MHz, which retains its primary status. The additional spectrum is used for single frequency mobile applications.

NF2 (70 - 70.3 MHz)

This sub-band is allocated to the amateur service on a secondary basis in order to undertake experimental work on propagation. The channels 70.025 – 70.150 MHz are used for civil defence purposes.

NF3 (148 - 150.05 MHz)

This frequency band was allocated internationally at WARC-92 for the mobile satellite service (MSS) in the Earth-to-space direction. The space-to-Earth link is provided at either 137 – 138 MHz or 400.15 - 401 MHz, depending on the satellite system.

NF4 (161.875 - 173.875 MHz)

The frequency band is used for sonobouy in the maritime service. Assignments were previously not allowed within a distance of 200 km from the coast. It is generally agreed that there is scope for increased sharing even near the coast. Proper care will be taken in making assignments near the coast in this frequency band and frequency coordination is to be performed with existing services on case by case basis.

NF5 (173.7 – 175.1 MHz)

This frequency band may be used for wireless microphones for services ancillary to Broadcasting (SAB) and services ancillary to programme (SAP) making. Use of wireless microphones must be co-ordinated and licensed.

NF6 (336 - 366 MHz)

The frequency band 336 – 346 MHz, paired with the frequency band 356 – 366 MHz, is allocated to fixed services on a primary basis and is applicable for use by Fixed Wireless Access (FWA) systems. Within this frequency band, the sub-band 337 – 344 MHz paired with 357 – 364 MHz is to be used for WAS whereas the sub-band 344 – 346 MHz paired with 364 – 366 MHz is to be used for alarm monitoring and tracking services using DSSS. The band is also considered for use by the Unmanned Aerial Vehicle (UAV) including Remotely Piloted Aircraft System (RPAS) within the sub band 336-346 paired with 356-366 MHz.This spectrum is potentially very useful for providing electronic communications services, in particular in rural areas considering its excellent propagation conditions.

NF7 (380 – 399.9 MHz)

The frequency band 380 –399.9 MHz is allocated through ITU Resolution 646 (Rev.WRC-15) to Public Protection and Disaster Relief (PPDR) applications in line with ITU-R M.2015.

NF8 (430 - 440 MHz)

This frequency band is allocated to the amateur service in South Africa in line with ITU Region 1. The sub-band 433.05 - 434.79 MHz, however, is also designated as an ISM band in Region 1, subject to the special authorisation of the administration concerned (see RR 5.138). Furthermore, the sub-band 433.05 - 434.79 MHz can be used for non-specific short range devices on an unlicensed basis in accordance with the prescribed Regulations. The consequence of this is that the amateur service may not claim protection from (in-band) emissions from ISM equipment operating in the band, nor can ISM equipment and low power devices claim protection from amateur users operating in the band.

NF8A (694 – 862 MHz)

Transitional Arrangements

The Authority resolved the following transitional arrangements for the right of use of spectrum in the frequency range 694 to 862 MHz:

(i) That Broadcasting Spectrum Assignments for the frequency band above 694 MHz, in the affected areas as stipulated in the Terrestrial Broadcasting Frequency Plan (Notice No. 298 of 2013 in Government Gazette No. 36321 and Notice No. 801 of 2014 in Government Gazette 38005 or the latest version), are to be used subject to meeting the conformance requirements in line with the GE06 Plan and are to be phased out during the performance period.

(ii) That broadcast transmissions and services ancillary to broadcasting for the frequency range 694 to 862 MHz are to be systematically switched off.

(iii) That matters related to spectrum management geared at minimising and or preventing harmful interference during the transitional arrangement period, is to be managed by the Authority to achieve systematic implementation and seamless transition.

(iv) That sharing and co-existence in the frequency range 694 to 862 MHz is to be implemented systematically through a Geographic separation of IMT Systems and Broadcasting Services in affected areas in accordance with the Terrestrial Broadcasting Frequency Plan 2013, Government Gazette 36321, read with the First Update to the Terrestrial Broadcasting Plan 2013 Government Gazette 38005[12] until the end of the migration from Analogue to Digital Terrestrial Television process.

NF9 (IMT Frequency Bands - Terrestrial)

The table below list all possible IMT frequency bands identified by the ITU, relevant ITU Radio Regulation footnote as well as the applicable ITU-R channel plan.

Band	Frequency band		RR FN	Channel Plan	WRC Resolution/s
450 MHz	450 – 470 MHz		5.286AA	Recommendation ITU-R M.1036	224 (Rev. WRC-15)

[12] The Multiplexes in the latest updated version of the Terrestrial Broadcasting Plan 2013 has been coordinated in terms of the GE06 Agreement and meets the conformance requirements of the Plan. The frequencies on this version have been successfully notified to the ITU-R Bureau and have been included in the Master International Frequency Register

700 MHz	694 – 790 MHz		5.312A and 5.317A	Recommendation ITU-R M.1036	224 (Rev.WRC-15) and 760 (WRC-15)
800 MHz	790 — 862 MHz		5.316B and 5.317A	Recommendation ITU-R M.1036 (A3)	224 (Rev. WRC-15) and 749 (Rev. WRC-15)
900 MHz	880 – 915 MHz // 925 – 960 MHz		5.317A	Recommendation ITU-R M.1036 (A2)	224 (Rev. WRC-15) and 749 (Rev. WRC-15)
1500 MHz	1 427-1 518 MHz		5.341A, 5.346, and 5.346A	Recommendation ITU-R M.1036[13]	223 (Rev. WRC-15), 750 (Rev. WRC-15), and 761 (WRC-15)
1800 MHz	1710 – 1785 MHz // 1805 – 1880 MHz		5.384A	Recommendation ITU-R M.1036 (B2)	223 (Rev. WRC-15)
1900 MHz	1900 – 1920MHz		5.388	Recommendation ITU-R M.1036 (B4)	Resolution **212 (Rev.WRC-15)**
2100 MHz	1920 – 1980 MHz // 2110 – 2170 MHz		5.388	Recommendation ITU-R M.1036 (B1)	212 (Rev. WRC-07) and 223 (Rev. WRC-12)
2100 MHz (TDD)	1900 – 1920 MHz, 2010 – 2025 MHz		5.388	Recommendation ITU-R M.1036 (B1)	212 (Rev. WRC-07) and 223 (Rev. WRC-12)
2300 MHz	2300 – 2400 MHz		5.384A	Recommendation ITU-R M.1036 (E1)	223 (Rev. WRC-12)
2600 MHz	2500 – 2690 MHz		5.384A	Recommendation ITU-R M.1036 (C1)	223 (Rev. WRC-12)
3500 MHz	3300 – 3400 MHz		5.429B	Recommendation ITU-R M.1036[14]	223 (Rev. WRC-15),
3.5 GHz	3400 – 3600 MHz		5.430A	Recommendation ITU-R M.1036 (F1)	NA

[13] Channelling arrangement for 1 427-1 518 MHz is under study at the ITU-R Working Party 5D
[14] Channelling arrangement for 3300 – 3400 MHz is under study at the ITU-R Working Party 5D

NF10 (876 - 880 // 921 - 925 MHz)

This frequency band is used by GSM-R systems.

NF11 (915 - 921 MHz) – Suppressed

NF12 (1452 - 1492 MHz) – Suppressed

NF13 (1980 – 2010 MHz paired with 2170 – 2200 MHz)

These frequency bands are allocated, amongst others, to both the mobile and mobile-satellite services and are also earmarked for the satellite component of IMT. Further, the implementation of IMT in the bands 1885-2025 MHz and 2110-2200 MHz is under study within ITU-R in accordance with Resolution **212 (Rev. WRC-15)**,

NF14 (Channel arrangements for Fixed Services Systems)

The table below list the main fixed services frequency bands and the applicable ITU-R Recommendation specifying the applicable frequency channel arrangement. Different channel spacing for each frequency band will allowed in accordance with the relevant ITU-R Recommendation. Sub-division of channels will also be allowed to cater for smaller bandwidth systems. Hop distances will be determined, amongst others, by propagation conditions. Sharing with services other than fixed services is indicated in the comments column.

Band	Band limits	Channel Plan	Comments
1-2GHz	1350 - 1375 MHz // 1492 – 1517 MHz 1375 – 1400 MHz // 1427 – 1452 MHz	ITU-R F.1242	
2 GHz	2025-2110 MHz // 2200-2285 MHz	ITU-R F.1098	
4 GHz	3600 – 4200 MHz	ITU-R F.635, Annex 1	Shared with FSS (downlink) (Note 1)
4.8 GHz	4400 – 5000 MHz	ITU-R F.1099, Annex 1	Government Services
Lower 6 GHz	5925 – 6425 MHz	ITU-R F.383	Shared with FSS (uplink) (Note 2)
Upper 6 GHz	6425 – 7110 MHz	ITU-R F.384	Shared with FSS (Note 3)
7 GHz (L7 + U7)	7110 – 7750 MHz	ITU-R F385, Annex 3	

Lower 8 GHz	7725 – 8275 MHz	ITU-R F.386, Annex 6	
Upper 8 GHz	8275 – 8500 MHz	ITU-R F.386, Annex 1	
10.5 GHz	10.15-10.3 GHz// 10.5-10.65 GHz	ITU-R F.1568, Annex 1	
11 GHz	10.7 – 11.7 GHz	ITU-R F.387	Shared with FSS (Note 4)
13 GHz	12.75 – 13.25 GHz	ITU-R F.497	
15 GHz	14.5 – 15.35 GHz	ITU-R F.636	
18 GHz	17.7 – 19.7 GHz	ITU-R F.595, Annex 1	
23 GHz	21.2-23.6 GHz or	ITU-R F.637, Annex 1	Shared with BSS (Note 5)
26 GHz	24.5 – 26.5 GHz	ITU-R F.748, Annex 1	Shared with EESS (Note 6)
28 GHz	27.5 – 29.5 GHz	ITU-R F.748-4, Annex 2	
32 GHz	31.8 – 33.4 GHz	ITU-R F.1520, Annex 1	
38 GHz	37.0 – 39.5 GHz	ITU-R F.749 Annex 1	
42 GHz	40.5 – 43.5 GHz	ITU-R F. 2005	
57 GHz	55.78 – 59 GHz	ITU-R F 1497	
80 GHz	71 – 76 GHz // 81 – 86 GHz	ITU-R F.2006	(Note 7)
94 GHz	92 – 94 GHz 94.1 – 95 GHz	ITU –R F. 2004	

Note 1: The band 3600 – 4200 MHz is used on a national basis for high capacity, core network telecommunication services under the fixed service using (for fixed services links generally over long hop lengths. The band 3625 – 4200 MHz, part of the C-band, is used extensively for FSS (space-to-Earth) applications. This band is shared between FS and FSS.

Note 2: In addition to deployment of fixed services links under the fixed services, the band 5850 – 6425 MHz, part of the C-band, is also used for FSS (Earth-to-space) applications on a shared basis with FS. The C-band is also used for satellite news gathering (SNG) operations, which will require frequency co-ordination with fixed links on a case-by-case basis. Users are encouraged to, as far as possible, use the Ku-band for SNG operations in South Africa in order to avoid the need for frequency coordination and the interference problems associated with C-band SNG operations. The band 5850 – 5926 MHz may also be used for temporary deployment for ENG and OB links under the mobile and fixed services respectively on a strictly coordinated basis.

Note 3: This band is used on a national basis for fixed services links under the fixed service. Fixed links are shared with NGSO MSS (space-to-Earth) feeder links and geo-stationary satellite orbit (GSO) FSS (Earth-to-space) systems on a strictly controlled and co-ordinated basis.

Note 4: This band is used on a national basis for fixed services links under the fixed service. The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FSS (space-to-Earth) systems (typically VSAT/SNG and PTP links). The sub-bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz is also used DTH satellite broadcasting services on a secondary basis to the FS and FSS services.

Note 5: In addition to the fixed services, the band 21.2 – 23 GHz is also allocated to the BSS on a co-primary basis. In accordance with 5.530A, all fixed links must comply to the prescribed pfd limits at national borders, unless otherwise agreed with the administration concerned. In line with 5.530B, the band 21.2 – 23 GHz will not be used for mobile services in South Africa and fixed service deployments will be restricted to for fixed services links.

Note 6: An unmanned receive only earth station, forming part of the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) is located in South Africa, and this system operates within the frequency band 25.5 to 27 GHz in the Earth Exploration Satellite (space-to-earth) service.

Note 7: The frequency bands 71 – 76 GHz paired with 81 – 86 GHz are allocated to the fixed services and is earmarked for very high capacity Broadband Fixed Wireless Systems over very short hop lengths. Radio frequency channel arrangements for fixed service systems operating in the bands 71-76 GHz and81-86 GHz are according to the Radio Frequency Spectrum Regulations (GG. No.38641, 30 March 2015).

NF15 (4400 – 5000 MHz)

The frequency band 4400 – 5000 MHz is allocated to electronic news gathering (ENG) and outside broadcasting (OB) services under the mobile and fixed services respectively, and is shared with Government Services.

NF16 (5725 – 5850 MHz)

The band 5725 – 5875 MHz is designated as an ISM band through ITU-R footnote 5.150. In addition to ISM applications, the band 5725 – 5850 MHz is also available for fixed links on a license-exempt basis, provided adherence to the provisions indicated below. Type Approval of these systems is mandatory. See also Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015).
(for additional requirements in using this band.

Frequency Range	Maximum Power	Modulation	Restrictions
5.725 – 5.850 GHz	1 watt peak e.i.r.p	Any modulation	No other restriction other than those related to the maximum power and the modulation scheme.
5.725 – 5.850 GHz	4 watt peak e.i.r.p	Frequency hopping or digital modulation only	No other restriction other than those related to the maximum power and the modulation scheme.
5.725 – 5.850 GHz	200 watt peak e.i.r.p with a max 1 watt peak transmitter power	Digital modulation only	- Fixed Radio Link devices only - Peak power spectral density must not exceed 17dBm /MHz

The Authority reserves the right to require users to change the frequency, reduce the power, or cease operations, where harmful interference is caused.

NF17 (14.0 – 14.5 GHz)

The frequency band 14.0 – 14.5 GHz, part of the Ku-band is used extensively for FSS (Earth-to-space) applications (VSAT/SNG/PTP links).

NF18 (27.5 – 28.35 GHz)

The frequency bands 27.5 – 28.35 GHz (base station to subscriber) and 31.000 – 31.300 MHz (subscriber to base station) are allocated to broadband service - local multipoint distribution services (LMDS) under the fixed service using a PTMP topology.

6 ITU Radio Regulations Footnotes

The ITU Radio Regulations footnote listed are those that are applicable to Region 1.

5.53 Administrations authorizing the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused to services to which the bands above 8.3 kHz are allocated. (WRC-12)

5.54 Administrations conducting scientific research using frequencies below 8.3 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference. (WRC-12)

5.54A Use of the 8.3-11.3 kHz frequency band by stations in the meteorological aids service is limited to passive use only. In the band 9-11.3 kHz, meteorological aids stations shall not claim protection from stations of the radionavigation service submitted for notification to the Bureau prior to 1 January 2013. For sharing between stations of the meteorological aids service and stations in the radionavigation service submitted for notification after this date, the most recent version of Recommendation ITU-R RS.1881 should be applied. (WRC-12)

5.54B *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. (WRC-12)

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

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

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

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

5.60 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 allocation of the band 115-117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**) and to the radionavigation service on a secondary basis (see No. **5.32**).

5.67 *Additional allocation:* in Mongolia, Kyrgyzstan and Turkmenistan, the 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-07)

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

5.67B The use of the band 135.7-137.8 kHz in Algeria, Egypt, Iran (Islamic Republic of), Iraq, 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 band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-12)

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), Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, South Africa, Swaziland, Tanzania, Chad, Zambia and Zimbabwe, the band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

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

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 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-12)

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

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

5.80A The maximum equivalent isotropically radiated power (e.i.r.p.) of stations in the amateur service using frequencies in the band 472-479 kHz shall not exceed 1 W. Administrations may increase this limit of e.i.r.p. to 5 W in portions of their territory which are at a distance of over 800 km from the borders of Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia, Ukraine and Yemen. In this frequency band, stations in the amateur service shall not cause harmful interference to, or claim protection from, stations of the aeronautical radionavigation service. (WRC-12)

5.80B The use of the frequency band 472-479 kHz in Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia and Yemen is limited to the maritime mobile and aeronautical radionavigation services. The amateur service shall not be used in the above-mentioned countries in this frequency band, and this should be taken into account by the countries authorizing such use. (WRC-12)

5.82 In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the 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)

5.84 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, Lesotho, Malawi, Mozambique, Namibia, Niger and Swaziland, the band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-12)

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, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan and Turkey, the frequency band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

5.99 *Additional allocation:* in Saudi Arabia, Austria, Iraq, Libya, Uzbekistan, Slovakia, Romania, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

5.103 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, Ethiopia, Iraq, Libya, Somalia and Swaziland, the band 2 160-2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-12)

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

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

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

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

procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**. The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency. (WRC-07)

5.112 *Alternative allocation:* in Denmark and Sri Lanka, the band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

5.114 *Alternative allocation:* in Denmark and Iraq, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

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

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

5.117 *Alternative allocation:* in Côte d'Ivoire, Denmark, Egypt, Liberia, Sri Lanka and Togo, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

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

5.128 Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-12)

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

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

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

5.132A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation

service are limited to oceanographic radars operating in accordance with Resolution 612 (Rev.WRC-12). (WRC-12)

5.132B *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan 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-15)

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, Uzbekistan 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-15)

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

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

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

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

5.138 The following bands:

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

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special 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, 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-15)

5.142 The use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-12)

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), Jordan, Kuwait, Libya, Morocco, Mauritania, Niger, 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)

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

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

5.145A 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 (Rev.WRC-12). (WRC-12)

5.145B *Alternative allocation*: in Armenia, Belarus, Moldova, Uzbekistan 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-15)

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

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

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

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

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

5.149A *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan 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-15)

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)

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

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

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

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

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

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

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

5.158 *Alternative allocation: in Armenia, Belarus,* Moldova, Uzbekistan and Kyrgyzstan, the frequency band 24 450-24 600 kHz is allocated to the fixed and land mobile services on a primary basis. (WRC-15)

5.159 *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 39-39.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-15)

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.

5.161B *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, The Former Yugoslav Rep. of Macedonia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Netherlands, Portugal, Kyrgyzstan, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland, Turkey and Ukraine, the frequency band 42-42.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-15)

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-12)

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

5.164 *Additional allocation:* in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency band 48.5-56.5 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-15)

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

5.169 *Alternative allocation:* in Botswana, Lesotho, Malawi, Namibia, the Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 50-54 MHz is allocated to the amateur service on a primary basis. In Senegal, the band 50-51 MHz is allocated to the amateur service on a primary basis. (WRC-12)

5.171 *Additional allocation:* in Botswana, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

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

5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is

also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)

5.179 *Additional allocation:* in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-12)

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

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

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

5.187 *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)

5.194 *Additional allocation:* in Azerbaijan, Kyrgyzstan, Somalia and Turkmenistan, the band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-07)

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

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

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

5.201 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 132-136 MHz is also allocated to the

aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-15)

5.202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-15)

5.204 *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Serbia, Singapore, Thailand and Yemen, the band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. **5.33**). (WRC-07)

5.205 *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)

5.208 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 bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in the relevant ITU-R Recommendation. (WRC-07)

5.208B[*]

In the frequency bands:

137-138 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,

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

Resolution **739 (Rev.WRC-15)** applies. (WRC-15)

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)

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

5.211 *Additional allocation*: in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Guinea, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the frequency band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-15)

5.212 *Alternative allocation:* in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), 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, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-12)

5.214 *Additional allocation:* in Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Somalia, Sudan, South Sudan and Tanzania, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-12)

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

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

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

5.221 Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-15)

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 1 W. (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)

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

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

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

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

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

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

5.235 *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.

5.236 Not used.

5.237 *Additional allocation:* in Congo (Rep. of the), Egypt, Eritrea, Ethiopia, Gambia, Guinea, 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, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**.

5.254 The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **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)

5.261 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, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Singapore, Somalia, Tajikistan, Chad, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

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

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

5.265 In the frequency band 403-410 MHz, Resolution **205 (Rev.WRC-15)** applies. (WRC-15)

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

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

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

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

5.271 *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. (WRC-12)

5.275 *Additional allocation*: in Croatia, Estonia, Finland, Libya, The Former Yugoslav Republic of 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-15)

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

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Mongolia, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-12)

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[15] It terms of the ITU Radio Regulations, Article: **4.10** Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies.

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.1260-1. 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-15)

5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **15.13**. (WRC-07)

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.

5.286 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-15)**. 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-15)

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

5.287 Use of the frequency bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU-R

M.1174-3. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned. (WRC-15)

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

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

5.296 *Additional allocation :* in Albania, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Gabon, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, the United Kingdom, Rwanda, San Marino, Serbia, Sudan, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Togo, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the frequency band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-15)

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

5.304 *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.

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

5.312 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, in Bulgaria the frequency bands 646-686 MHz, 726-758 MHz, 766-814 MHz and 822-862 MHz, and in Poland the frequency band 860-862 MHz until 31 December 2017, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-15)

5.312A In Region 1, the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution **760 (WRC-15)**. See also Resolution **224 (Rev.WRC-15)**. (WRC-15)

5.316B In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790-862 MHz is subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions **224 (Rev.WRC-15)** and **749 (Rev.WRC-15)** shall apply, as appropriate. (WRC-15)

5.317A The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC-15)**, **760 (WRC-15)** and **749 (Rev.WRC-15)**, 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-15)

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, Egypt, Spain, Lesotho, Libya, Morocco, Malawi, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **9.21**. (WRC-12)

5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz, in Bulgaria the bands 862-890.2 MHz and 900-935.2 MHz, in Poland the band 862-876 MHz until 31 December 2017, and in Romania the 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-12)

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 (WRC-15)** shall apply. (WRC-15)

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

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

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

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

5.331 *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-12)

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

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

5.337 The use of the bands 1 300-1 350 MHz, 2 700-2 900 MHz and 9 000-9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne

transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.

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

5.338 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, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC-15)** applies. (WRC-15)

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

5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by No. **5.422**,
10.68-10.7 GHz,	except those provided for by No. **5.483**,
15.35-15.4 GHz,	except those provided for by No. **5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations
50.2-50.4 GHz[2],	
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
109.5-111.8 GHz,	
114.25-116 GHz,	
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	
190-191.8 GHz,	
200-209 GHz,	
226-231.5 GHz,	
250-252 GHz. (WRC-03)	

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

5.341A In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in

[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)

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

5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, 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, Swaziland, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **761 (WRC-15)**. (WRC-15)

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, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen,

[*] *Note by the Secretariat:* This Resolution was revised by WRC-03.

the allocation of the band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-07)

5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the band 1 525-1 530 MHz is also allocated to the aeronautical mobile service on a primary basis. (WRC-2000)

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

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

5.352A 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, France and French overseas communities of Region 3, 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-15)

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

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

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

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

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

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

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

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

5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Cameroon, the Russian Federation, France, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-15)

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 band 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**. (WRC-12)

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

5.369 *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 band 1 610-1 626.5 MHz (Earth-to-space) 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 band 1 610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. **29.13** applies).

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

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

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

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

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

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

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

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

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

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

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

5.382 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-15)

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 frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

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

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

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

5.388

5.388A In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications (IMT), in accordance with Resolution **221 (Rev.WRC-07)**. Their use by IMT applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-12)

5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT-2000 base station in neighbouring countries, in the bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of 127 dB(W/(m^2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-12)

5.389 Not used.

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

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

5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services. (WRC-2000)

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.

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

5.396 Space stations of the broadcasting-satellite service in the band 2 310-2 360 MHz operating in accordance with No. **5.393** that may affect the services to which this band is allocated in other countries shall be coordinated and notified in accordance with Resolution **33 (Rev.WRC-97)**[*]. Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use.

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, Ethiopia, India, Iran (Islamic Republic of), Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Swaziland, 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-15)

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

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

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

[*] *Note by the Secretariat:* This Resolution was revised by WRC-03.

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

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

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

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

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

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

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

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

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

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

5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

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

5.424A 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 Azerbaijan, Kyrgyzstan and Turkmenistan, the frequency band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-15)*

5.429 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-15)

5.429A *Additional allocation*: in Angola, Benin, Botswana, Burkina Faso, Burundi, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)

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

5.430 Additional allocation: in Azerbaijan, Kyrgyzstan and Turkmenistan, the frequency band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-15)

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 and Israel, the frequency band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-15)

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

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

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

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

5.441 The use of the bands 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)

5.442 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)

5.443AA 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-15)**;

– aeronautical telemetry transmissions from aircraft stations (see No. **1.83**) in accordance with Resolution **418 (Rev.WRC-15)**. (WRC-15)

5.446 *Additional allocation:* in the countries listed in No. **5.369**, the frequency band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. **5.369** and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodeterminationsatellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power fluxdensity at the Earth's surface shall in no case exceed −159 dB(W/m2) in any 4 kHz band for all angles of arrival. (WRC-15)

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev.WRC-12)**. (WRC-12)

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

5.446C *Additional allocation:* in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia) and in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. **1.83**), in accordance with Resolution **418 (WRC-07)**. These stations shall not claim protection from other stations operating in accordance with Article **5**. No. **5.43A** does not apply. (WRC-12)

5.447 *Additional allocation:* in Côte d'Ivoire, Egypt, Israel, Lebanon, the Syrian Arab Republic and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. In this case, the provisions of Resolution **229 (Rev.WRC-12)** do not apply. (WRC-12)

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)

5.447F 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). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638-0 and ITU-R RS.1632-0. (WRC-15)

5.448 *Additional allocation:* in Azerbaijan, Kyrgyzstan, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-12)

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. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638-0. (WRC-15)

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

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

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

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229 (Rev.WRC-12)** do not apply. (WRC-12)

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, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

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)

5.458 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**.

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

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

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

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

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

-135 dB (W/m^2) in a 1 MHz band	for	$0° \leq \theta < 5°$
-135 + 0.5 (θ -5) dB (W/ m^2) in a 1 MHz band	for	$5° \leq \theta < 5°$
-125 dB (W/ m^2) in a 1 MHz band	for	$25° \leq \theta \leq 90°$ (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.

5.468 Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, 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, Swaziland, 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-15)

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

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

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

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

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

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

5.473A 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, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

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

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

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

5.481 *Additional allocation:* in Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania and Uruguay, the frequency band 10.45-

10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica, the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-15)

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

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

5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

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

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

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

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

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

satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)

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

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

5.495 *Additional allocation:* in France, Greece, Monaco, Montenegro, Uganda, Romania 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-15)

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

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

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

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

5.500 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

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

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

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

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

– –115 dB(W/(m^2 · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal State;

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

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

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

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

  i) 4.7*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,

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, Swaziland, Chad, Viet Nam and Yemen, the frequency band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-15)

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

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

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

5.508 *Additional allocation:* in Germany, France, Italy, Libya, The Former Yugoslav Rep. of Macedonia and the United Kingdom, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-12)

5.508A In the frequency band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom and Tunisia by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)

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

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

5.509C For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **163 (WRC-15)** and14.5-14.8 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/(m2 · 4 kHz)) produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (WRC-15)

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

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

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

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

5.511 *Additional allocation:* in Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Oman, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

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

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

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

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

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

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

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

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

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

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

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations

operating under Appendix **30A**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

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

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

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Radio Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **143 (WRC-03)**[*]. (WRC-03)

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

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

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

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

5.522A 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)

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

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

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

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

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

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

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

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

5.524 *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Togo and Tunisia, the frequency band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux density of space stations in the fixed-satellite service in the frequency band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the frequency band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter frequency band. (WRC-15)

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

interference shall, to the extent practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz.

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

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

5.527A The operation of earth stations in motion communicating with the FSS is subject to Resolution 156 (WRC-15).

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**.

5.530A 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/(m^2 · 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)

5.530D See Resolution **555 (WRC-12)**. (WRC-12)

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)

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

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

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

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

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

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. (WRC-12)

5.536B In Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-15)

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

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

5.537A In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-12)**. (WRC-12)

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

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

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

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

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

5.542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (WRC-12)

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

5.543A In Bhutan, Cameroon, 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 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the frequency band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the frequency band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the frequency band 31.3-31.8 GHz, taking into account the protection criterion as given in the most recent version of Recommendation ITU-R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the frequency band 31.3-31.8 GHz shall be limited to −106 dB(W/MHz) under clear-sky conditions, and may be increased up to −100 dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions. See Resolution **145 (Rev.WRC-12)**. (WRC-15)

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

5.545 *Different category of service:* in Armenia, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic

Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-12)

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution **75 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

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

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

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

5.549A In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed −73.3 dB(W/m^2) in this band. (WRC-03)

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

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

5.551H 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 frequency band 42.5-43.5 GHz 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 frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631-0 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θmin 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 bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution **122 (Rev.WRC-07)**. (WRC-07)

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

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

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

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

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)

5.556 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)

5.557A 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)

5.559B 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)

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

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

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

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

5.562C Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed –148 dB(W/(m^2 · MHz)) for all angles of arrival. (WRC-2000)

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

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

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

5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 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/(m^2 · MHz)) for all angles of arrival. (WRC-2000)

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

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

5.565 The 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.

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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)

7 List of frequency bands used for Maritime services

Frequency Band	Frequency Used	Services
505-526.5 kHz	518 kHz	[Transmission of Maritime Safety Information (Appendix 15 of ITU RR)[16] (Meteorological, navigational and other urgent information)
2 173.5-2 190.5 kHz	2 182 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	2 187, kHz	DSC Watchkeeping (Article 31) (Appendix 15 of ITU RR)
4 063-4 438 kHz		(Appendix 17)[17]
		(Appendix 17)
	4 125 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	4 207.5 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	4 369 kHz	(Appendix 17)
	4 375 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)
	4 417 kHz	Coast Station duplex transmission of Channel 421.
6 200-6 525 kHz	6 203 kHz	(Appendix 17)
	6 215 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	6 312 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	6 504 kHz	(Appendix 17)
8 195-8 815 kHz	8 207 kHz	(Appendix 17)
	8 216 kHz	(Appendix 17)
	8 255 kHz	(Appendix 17)
	8 291 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	8 731 kHz	(Appendix 17)
	8 740 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)
	8 779 kHz	(Appendix 17)
	8 414.5 kHz	DSC watchkeeping (Article 31)
12 230-13 200 kHz	12 254 kHz	(Appendix 17)

[16] Only distress and safety communications are provided, with MSI and Medical Assistance at sea. All MF/HF public correspondence ceased as it was no longer commercially viable and sustainable. Other technologies accommodate this type of communications. (Satellite, GSM, Trunked radio networks, etc.).

[17] Public Correspondence facilities with effect from 1 September 2014 has been discontinued.

Frequency Band	Frequency Used	Services
	12 290 kHz	(Appendix 17)
	12 299 kHz	(Appendix 17)
	12 359 kHz	(Appendix 17)
	12 577 kHz	DSC watchkeeping (Article 31) (Appendix 15 of ITU RR)
	13 101 kHz	(Appendix 17)
	13 146 kHz	Transmission of meteorological bulletins; notices to navigators; (Appendix 17)
16 360-17 410 kHz	16 381 kHz	(Appendix 17)
	16 420 kHz	Distress, Urgency and Safety communications (traffic) by radio telephony (voice) (Appendix 15 of ITU RR)
	16 456 kHz	(Appendix 17)
	16 537 kHz	(Appendix 17)
	16 804.5 kHz	DSC watchkeeping (Appendix 15 of ITU RR)
	17 263 kHz	(Appendix 17)
	17 338 kHz	(Appendix 17)

Frequency Band as per draft NRFP	Frequency Used	Services
22 000-22 855 kHz	22 009 kHz	ITU Appendix 17
	22 015 kHz	(Appendix 17)
	22 060 kHz	(Appendix 17)
	22 705 kHz	(Appendix 17)
	22 711 kHz	(Appendix 17)
	22 756 kHz	(Appendix 17)
154-156.4875 MHz	Several channels used within this range in accordance with Appendix 18 of the ITU RR **Channel 2006 – 160.900 MHz**	APPENDIX 18 Channel 2006 allocated for Man Overboard Devices used for search and rescue operations. New AIS technologies.
156.7875-156.8125 MHz	Channel 16 in accordance with Appendix 18 of the ITU RR **156.7750** **156.8250**	**Appendix 18.** **Mobile Satellite Earth to Space for long range AIS broadcasts (ship stations)**
156.8375-162.0250 MHz	Several channels used within this range in accordance with Appendix 18 of the ITU RR	

	Channel 28 in accordance with Appendix 18 of the ITU RR	**APPENDIX 18** services allocated: Coast Station Analogue Maritime Safety Information (MSI) transmissions using Simplex configurations - 01 to 05; and 60 to 65. Priority to digital transmissions as per Footnote w) from 1 January 2017. Protection of Channel 70 for DSC and Channel 16 distress communications, AIS1 (161.975MHz) and AIS2 (162.025) for navigational safety

Short Title

This document shall be called the "*National Radio Frequency Plan 2018"*

Repeals

1. South African Re-Planning Exercise (SABRE 1) carried out in 1997 covering the revision of South African Bands (Band Plans) and Migration Strategies published in Notice 759 of 1997, covering the frequency ranges 20 MHz and 3.6 GHz, is hereby repealed**.**
2. South African Bands Re-Planning Exercises (SABRE II) carried out in 2001 addressing radio frequency spectrum above 3 GHz with the exception of those bands already addressed in SABRE I, published in notice number 1920 of 2001, is hereby repealed
3. The South African Table of Frequency Allocations 2004 which consolidated SABRE 1 and SABRE 2 in one plan covering the range 20MHz to 70 GHz, published in notice 1442 of 2004, is hereby repealed.
4. The National Radio Frequency Plan, published in notice 727 of 2010, is hereby repealed.
5. The National Radio Frequency Plan 2013 which updated National Radio Frequency Plan of 2010, published in Government Gazette number 36336 (notice 354 of 2013), is hereby repealed.