
GENERAL NOTICE

NOTICE 727 OF 2010

NATIONAL RADIO FREQUENCY PLAN

INDEPENDENT COMMUNICATIONS AUTHORITY OF
SOUTH AFRICA

2010

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SECTION 1: TERMS, DEFINITIONS AND ACRONYMS

Terms and Definitions

Aeronautical Fixed Service	A Radiocommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air transport
Aeronautical Mobile Service	A mobile service between aeronautical stations, and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies
Aeronautical Mobile (OR)** (Off-Route 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)* (Route 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-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 Mobile-Satellite (R)* (Route 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 (OR)** Off-Route Service	An aeronautical mobile-satellite service intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes
Aeronautical Radionavigation Service	A radionavigation service intended for the benefit and for the safe operation of aircraft
Aeronautical Radionavigation-Satellite Service	A radionavigation-satellite service in which earth stations are located on board aircraft
Allotment (of a radio frequency or of a 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 <i>radiocommunication service</i> in one or more identified countries or geographical areas and under specified conditions
Allocation (of a radio 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 <i>radiocommunication services</i> or the <i>radio astronomy service</i> under specified conditions. This term shall also be applied to the frequency band concerned
Assignment (of a radio frequency or radio frequency channel)	Authorization given by an administration for a radio <i>station</i> to use a radio frequency or radio frequency channel under specified conditions

Amateur	Means someone who is interested in the radio technique solely for a private reason and not for financial gain and to whom the Authority has granted an amateur radio station license
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 Radio Station	Means a radio station for a service of self-tuition, intercommunication and technical investigation that is operated by an amateur
Amateur-Satellite Service	A Radiocommunication service using space stations on earth satellites for the same purpose as those of amateur 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-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
Call sign	The allocation of identification letters and numbers for the purposes of allocating class licenses to amateurs as per Article 19 of the ITU Radio Regulations
Electronic Communications Act	The Electronic Communications Act, 2005 (Act No. 36 of 2005)
Electronic Communication	Any transmission, emission and / or reception of radio waves for a specific communication purposes
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 air-borne 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.
Fixed Service	A Radiocommunication service between specified fixed points

Fixed-Satellite Service	A Radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified 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
Inter-Satellite Service	A Radiocommunication service providing links between artificial earth satellites
Land Mobile Service	A mobile service between base stations and land mobile stations or between land mobile stations
Land Mobile-Satellite Service	A mobile-satellite service in which mobile earth stations are located on land
Maritime Mobile Service	A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service
Maritime Mobile-Satellite Service	A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service
Maritime Radionavigation Service	A radionavigation service intended for the benefit and for the safe operation of ships
Maritime Radionavigation-Satellite Service	A radionavigation-satellite service in which earth stations are located on board ships
Meteorological Aids Service	A radiocommunication service used for meteorological, including hydrological, observations and exploration
Meteorological-Satellite Service	An earth exploration-satellite service for meteorological purposes
Mobile Service	A Radiocommunication service between mobile and land stations, or between mobile stations
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 using one or more space stations. This service may also include feeder links necessary for its operation
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
Radio Communication Service	An electronic communications service provided by means of radio waves

Radio Astronomy Service	A service involving the use of radio astronomy
Radiodetermination Service	A radiocommunication service for the purpose of radiodetermination
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
Radionavigation Service	A radiodetermination service for the purpose of radionavigation
Radionavigation-Satellite Service	A radiodetermination-satellite service for the purpose 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
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. This service may also include feeder links necessary for its operation
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
Safety Service	Any Radiocommunication service used permanently or temporarily for the safeguarding of human life and property
Space Research Service	A Radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research 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-Satellite Service	A Radiocommunication service using space stations on earth satellites for the same purpose as those of standard frequency and time signal service. This service may also include feeder links necessary for its operations
Suppressed	Suppressed in the national footnotes section refers to footnotes that are no longer applicable

List of Acronyms

AGA	Astronomy Advantage Act, 2007 (Act No. 21 of 2007)
AMSS	Aeronautical Mobile Satellite Service
ARNS	Aeronautical Radionavigation Service.
ASDE	Airports Surface Detection Equipment
BFWA	Broadband Fixed Wireless Access
B-GAN	Broadband Global Area Network
BRAN	Broadband Access Network
BSS	Broadcast Satellite Service
BST	Base Station Transmit
BTX	Base Transmit
C band	Frequency band between about 4 and 6 GHz
CAA	Civil Aviation Authority
CB	Citizens' Band.
CCIR	The International Radio Consultative Committee now called ITU-R.
CDMA	Code Division Multiple Access
CEPT	European Conference of Postal and Telecommunications Administrations.
CISPR	The International Radio Interference Committee
CT1	Cordless Telephone System 1.
CT2	Second generation cordless telephones operating to specification MPT1334.

CTCSS	Continuous Tone Controlled Signalling System (or Continuously Tone Controlled Squelch)
dBW	Decibels relative to one Watt of power.
DECT	Digital European Cordless Telecommunication system. ERC Decision ERC/DEC/(94)03 refers.
DF	Duplex Frequency
DME	Distance Measuring Equipment.
DSC	Digital Selective Calling
DSI	Detailed Spectrum Investigation.
DSSS	Direct Sequence Spread Spectrum
DTV	Digital Television
DVB-T	Terrestrial Digital Video Broadcasting
Erp	Equivalent Radiated Power
e.i.r.p	Effective Isotropically Radiated power.
EBU	European Broadcasting Union
EDGE	Enhanced Data Rates for GSM Evolution
EESS	Earth Exploration-Satellite Service
E-GSM	Extended GSM
EMC	Electromagnetic Compatibility
ENG	Electronic News Gathering
ENG/OB	Electronic News Gathering / Outside Broadcasting
EPIRBs	Emergency Position Indicating Radio Beacons.

ERC	European Radiocommunications Committee - the main CEPT committee looking after radio matters.
ERMES	European Radio Messaging System.
ERO	European Radiocommunications Office-a permanent secretariat within the CEPT committee looking after radio matters.
ETS	European Telecommunications Standard.
ETSI	European Telecommunications Standards Institute
FDDA	Field Disturbance and Doppler Apparatus
FHSS	Frequency Hopping Spread Spectrum
FM	Frequency Modulation
FSS	Fixed Satellite Service
FTP	File Transfer Protocol
FWA	Fixed Wireless Access
GAUTRAIN	A high speed train for Gauteng
GLONASS	Global Navigation Satellite System
GMPCS	Global Mobile Personal Communications by Satellite
GMDSS	Global Maritime Distress and Safety System.
GNSS	Global Navigation-Satellite System.
GPRS	General Packet Radio Service
GPS	Global Positioning System - a satellite radionavigation system operated by the US.
GSM	Global System for Mobile communications. Originally Groupe Spécial Mobile. See ERC Decision ERC/DEC/(94)01.

GSM1800	GSM using 1800 MHz frequencies
GSM900	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
HDTV	High Definition Television
HF	High Frequency (3 to 30 MHz)
HFBC	High Frequency Broadcasting.
HIPERLAN	High Performance Radio Local Area Networks.
HDFS	Hadoop Distributed File System
IARU	International Amateur Radio Union
ICAO	International Civil Aviation Organisation
ICT	Information Communication Technology
IEC	International Electrotechnical Committee
IEEE	Institute of Electrical and Electronic Engineers
IEEE 802.11	IEEE Regulatory Advisory Group on Wireless LANs
IFRB	International Frequency Registration Board, now the Radio Regulations Board of ITU-R.
ILS	Instrument Landing System-aeronautical radionavigation system.

IMO	International Maritime Organisation
LPVS	Low Power Video Surveillance
IMT	International Mobile Telecommunications
ISM	Industrial, Scientific and Medical. The use of radio for non-communication purposes such as microwave heating etc.
ISP	Internet Service Provider
ITU	International Telecommunication Union.
Ka band	Part of the frequency band between about 27 and 40 GHz
Ku band	Part of the frequency band between about 11 and 14 GHz
L band	Frequency band around 1.5 GHz
LAN	Local Area Network
LEOs	Low Earth Orbit satellites
LF	Low Frequency (30 to 300 kHz)
LPVS	Low Power Video Surveillance
MF	Medium Frequency (300 to 3000 kHz)
Mob-87	World Administrative Radio Conference for the Mobile Services, Geneva, 1987.
MoU	Memorandum of Understanding
MPT	Mobile Public Trunking
MSS	Mobile Satellite Service
MTX	Mobile Transmit
MVDS	Multipoint Video Distribution System.

NGSO	Non-geostationary Satellite Orbit
NIB	Non Interference Basis. This means that the service in question must not cause interference to, nor claim protection from interference from, other services.
OB	Outside Broadcast.
PAMR	Public Access Mobile Radio.
PCN	Personal Communication Networks (at 1800 MHz)
PLB	Public Locater Beacons
PMR	Private Mobile Radio.
PMSE	Programme Making and Special Events.
PPDR	Public Protection and Disaster Relief
PSTN	Public Switched Telephone Network
R&D	Research & Development.
Radioastronomy	Astronomy based on the reception of radio waves of cosmic origin.
Radiodetermination	The determination of the position, velocity and /or other characteristic of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.
Radiolocation	Radiodetermination used for purposes other than those of radionavigation.
Radionavigation	Radiodetermination used for the purposes of navigation including obstruction warning
RFID	Radio Frequency Identification systems
RLAN	Radio Local Area Network
RNSS	Radio Navigation Satellite Service
RSA	Republic of South Africa

RR	Radio Regulation of the International Telecommunication Union
RTT	Road Transport Telematics
SAB	Services Ancillary to Broadcasting
SABRE	South African Band Replanning Exercise
SAP	Services Ancillary to Programme making
SATFA	South African Table of Frequency Allocation
S-DAB	Satellite Digital Audio Broadcasting
SKA	Square Kilometre Array
SNG	Satellite News Gathering
SRBR	Short Range Business Radio
SRDs	Short Range Devices, formerly referred to as Low Power Devices (LPDs).
SSS	Space Science Service
T-DAB	Terrestrial Digital Audio Broadcasting.
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
TETRA	Trans European Trunked Radio System (now called Terrestrial Trunked Radio).
TFTS	Terrestrial Flight Telecommunications System.
UHF	Ultra High Frequency (300 to 3000 MHz)
UMTS	Universal Mobile Telecommunications System
USAL	Under –served area Licensees.

UWB	Ultra Wideband technology
VHF	Very High Frequency (30 to 300 MHz)
VLBI	Very Long Baseline Interferometry.
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. WARC's are now superseded by WRC's.
WLAN	Wireless Local Area Network
WLL	Wireless Local Loop
WRC	World Radiocommunication Conference.

SECTION 2: PREAMBLE

2.1 Legislative Framework

The aim of the Electronic Communications Act, 2005 (Act No. 36 of 2005), herein after referred to as the Act; is to promote convergence in the broadcasting, broadcasting signal distribution and telecommunications sectors and to provide the legal framework for convergence of these sectors; to make new provisions for the regulation of electronic communications services, electronic communications network services and broadcasting services; to provide the granting of new licenses and new social obligations; to provide for the control of the radio frequency spectrum; to provide for the continued existence of the Universal Service Agency and the Universal Service Fund; and to provide for matters incidental thereto.

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.

No person may transmit any signal by radio or use radio apparatus to receive any signal by radio except under and in accordance with a radio frequency spectrum license granted by the Authority to such person in terms of section 31(1) of the Act.

A radio frequency spectrum license is required in addition to any service license contemplated in Chapter 3 of the Act, where the use of such service entails the use of radio frequency spectrum in terms of section 31(2) of the Act.

The Authority may, taking into account the objects of the Act, prescribe procedures and criteria for awarding radio frequency spectrum licenses for competing applications or instances where there is insufficient spectrum available to accommodate demand as per section 31(3) of the Act.

The normal procedure for applying for spectrum and all other related information can be found on the Authority's website by logging on to www.icasa.org.za.

This revision of the South African Table of Frequency Allocation incorporates the decisions taken by World Radio Communications Conferences including up to WRC 07 that was held in Geneva, 22 October – 16 November 2007. It also includes updates on the Table of Frequency Allocations extending up to 3000 GHz, South African National Footnotes and corrections of typographical errors of previous editions of the South African Table of Frequency Allocations.

A document containing ITU – R and all other relevant Resolutions and Recommendations referred to in this document can be found on the Authority's website. This document contains a list of all ITU – R Footnotes for information purposes. All the ITU – R Footnotes that are alpha-numeric are temporary and

will be updated as soon as the relevant footnote numbers are made available by the ITU.

The Authority consulted with the Minister of Communications 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, aeronautical services and scientific research. The South African Table of Frequency Allocations has been updated to incorporate the outcome of that consultation.

Objectives of the Review and Changes Made

The South African Table of Frequency Allocations (SATFA) allocates the Electromagnetic Spectrum to Radio Services in the Frequency Bands between 9 kHz and 3000 GHz. SATFA is based on the provisions of the ITU – R Radio Regulations resulting from various World Radiocommunication Conferences, including the WRC 2007, convened by the International Telecommunication Union (ITU).

Revisions of SATFA will occur due to National Spectrum Requirements or when changes to the ITU Table of Frequency Allocations are made as a result of future World Radiocommunication Conferences convened by the International Telecommunication Union.

There have been tremendous developments in the Information Communications Telecommunications (ICT) Sector of the Republic of South Africa since the last publication of the South African Table of Frequency Allocations in 2004. These developments include the repealing of the Telecommunications Act, 1996 (Act No. 103 of 1996) and the introduction of the Act. Chapter 5 of the Act outlines Radio Frequency Spectrum Management in South Africa.

This publication of the Revised South African Table of Frequency Allocations is part of the programme to extend and update information being made available to the public and is aimed at current users, potential users and investors in Electronic Communications Sector of the Republic of South Africa. It outlines the types of radiocommunication services permitted in each frequency band together with some notes on future developments. It takes into account International, Regional and Bilateral agreements on Radio Frequency Spectrum entered into up to the end of World Radiocommunications Conference 2007.

The pattern of radio use is not static. 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 continuous review.

In view of the above, it is the intention of the Authority to issue new editions of the national radio frequency plan regularly, taking account of the introduction of new radiocommunication services and the phasing out of older services. The

spectrum is a finite resource and as the pressure on it constantly grows; its management becomes more complex.

The Authority is mandated to ensure that spectrum is used in the best possible way so as to make spectrum available for new services as well as existing ones. This is accomplished through reviews of spectrum use and implementing a clear strategy for future use of the radio spectrum to provide the essential support required for ongoing economic and social development of the Republic of South Africa. The Authority will gratefully receive any comments and ideas you may have which will assist us in making future editions

The following is the summary of fundamental objectives informing this review:

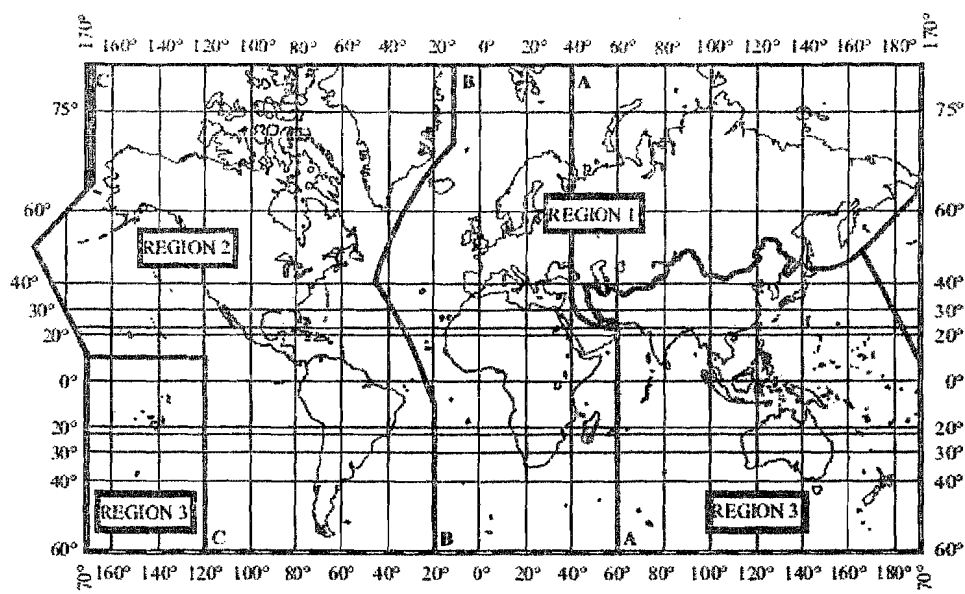
- To effect prescripts of the Act and the 2007 policy directives published in Government Gazette No. 30308 of 17 September 2007 which states that the Authority should take into account the results of WRC 2007 when revising the national radio frequency plan
- To update the table with changes made by WRC 97, WRC 2000, WRC03, and WRC 07
- To allocate spectrum that was previously not allocated by extending the range to cover 9 kHz to 3000 GHz in line with the Act and ITU-R
- To make spectrum available for new radio interfaces such as WIMAX, which were included as the newest member of the IMT family of standards
- To facilitate future identification of spectrum for very low power fixed links in the spectrum below 1 GHz in order to promote small medium and micro enterprises in the communications industry.
- To facilitate developments of the frequency migration strategies and to facilitate migration of high capacity fixed links to higher frequency bands
- To facilitate the development of a framework for usage of ISM frequency bands to support rural development objectives
- To promote access to lower frequency bands for broadband wireless access to support rural development
- To promote access to frequency bands below 1 GHz such as the 790 – 862 MHz band which offers both coverage and capacity to help bridge the “digital gap” between sparsely-populated and densely-populated areas and to increase universal service and access in the country.

The following changes have been implemented in this review:

- Identification and allocation of spectrum for IMT - spectrum has been allocated in line with WRC 07 in the bands 790 – 862 MHz, 2300 – 2400 MHz, 2500 – 2690 MHz, 3400 – 3600 MHz, 1518 – 1525 MHz and 1668 – 1675 MHz. Where there are existing services that need to be protected such provision has been made.
- Allocation of spectrum for amateur radio – spectrum has been allocated in line with WRC 07 and previous WRCs in the bands 135.7 - 137.8 kHz, 2300 – 2450 on secondary basis.
- Addition of a proposal to change DTH from secondary to to primary status in the 10.7 – 11.7 GHz
- National footnote NF 49 of SATFA 2004 has been replaced by national footnote NF 2 addressing the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007)
- Updated ISM frequency bands in line with GG No. 31321 Notice No. 944 of 08 August 2008
- Updated the 5725 - 5850 MHz band in line with GG No. 31290 Notice No. 926 Of 29 July 2008.
- Added allocations for inductive loop and RFID in line with GG No. 31290 Notice No. 926 of 29 July 2008
- Added new maritime, aeronautical allocations below 20 MHz and new satellite allocations above 70 GHz

2.2 ITU - R 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.

2.3 The Structure of SATFA

The South African 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 appears in the Radio Regulations of the ITU.

The South African Table of Frequency Allocations covers the frequency range 9 kilohertz (kHz) to 3000 Gigahertz. It lists for each frequency range the types of radiocommunications 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.

The Table of Frequency Allocations will be updated regularly. The allocations are not static and will change in time as new radio systems are introduced and old ones phased out. Changes will also be made to reflect agreements reached on spectrum utilisation at International level, e.g. at World Radiocommunication Conferences (WRCs) of the ITU or as a consequence of national decisions made to meet our specific national requirements.

2.3.1 Column 1 - ITU Region 1 Allocations

The ITU Radio Regulations divides the spectrum into frequency bands with the allocation of **primary** and **secondary services**. Services with the names printed

in "capitals" (example: FIXED) are "primary" services; and those with the names printed in "normal characters" (example: Mobile) are "secondary" services.

Secondary services are on a non-interference basis (NIB) to the primary services. 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 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 which appear in the table below the allocated service or services 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 Spectrum Usage

This column indicates the range of frequencies associated with services currently used in South Africa (both primary and secondary).

2.3.3 Column 3 – Typical Applications

This column indicates frequency utilisation for existing or new systems relating to the South African allocations. It is not an all-inclusive list of applications, but serves as a quick reference of spectrum availability for service/equipment applications. The blanks on the typical applications and comments column mean that the Authority does not have records of any such typical applications.

2.3.4 Column 4 - Notes and Comments

This column indicates items such as the following: Government Gazette Notices pertinent to specific frequency bands, future requirements in specific bands, and ITU Recommendations, which require implementation.

2.3.5 Frequencies

Frequencies are expressed as follows:

- 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 3000 GHz.

Table 1: Band Segmentation

Symbols	Frequency Range
VLF	9 kHz – 30 kHz
LF	30 kHz – 300 kHz
MF	300 kHz – 3 MHz
HF	3 MHz – 30 MHz
VHF	30 MHz – 300 MHz
UHF	300 MHz – 3 GHz
SHF	3 GHz – 30 GHz
EHF	30 GHz - 300 GHz
	300 GHz – 3000 GHz

2.4 Contact Details

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

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SECTION 3: TABLE OF FREQUENCY ALLOCATIONS

PART A: 9 kHz - 30 MHz

9 - 110 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
Below 9 (Not allocated) 5.53 5.54	(Not Allocated) 5.53 5.54		
9 - 14.00 RADIONAVIGATION	RADIONAVIGATION	Nav. Aids	
14.00 - 19.95 FIXED MARITIME MOBILE 5.57 5.55 5.56	FIXED MARITIME MOBILE 5.57 5.56		

19.95 - 20.05			
STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)		
20.05 – 70			
FIXED	FIXED		
MARITIME MOBILE 5.57	MARITIME MOBILE 5.57		
		59.75 - 60.25 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.
5.56 5.58	5.56		
70 – 72			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav. Aids	
		70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer

72 – 84			
FIXED	FIXED		
MARITIME MOBILE 5.57	MARITIME MOBILE 5.57		
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav. Aids	
		70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.
5.56	5.56		
84 – 86			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav. Aids	
		70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.

86 – 90			
FIXED	FIXED		
MARITIME MOBILE 5.57	MARITIME MOBILE 5.57		
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav. Aids	
		70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.
5.56	5.56		
90 – 110			
RADIONAVIGATION 5.62	RADIONAVIGATION 5.62	Nav. Aids	
Fixed	Fixed		
		70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.

110 - 255 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
110 – 112			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
RADIONAVIGATION	RADIONAVIGATION	70 - 119 kHz Inductive Loop System including RFID.	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.
112 – 115			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav Aids 70 - 119 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.

115 - 117.6			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav Aids	Government Gazette No 31127, Notice No 713 of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer
Fixed	Fixed	70 - 119 kHz Inductive Loop System including RFID	
Maritime mobile	Maritime Mobile		
5.66			
117.6 – 126			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
RADIO NAVIGATION 5.60	RADIO NAVIGATION 5.60	Nav Aids	

5.64		119 - 135 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer
126 - 129			
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav Aids	
129 - 130			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
RADIONAVIGATION 5.60	RADIONAVIGATION 5.60	Nav Aids	
		119 - 135 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer.

130 – 135.7			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
5.67		119 - 135 kHz Inductive Loop System including RFID	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer
135.7 – 137.8			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
Amateur 5.67A	Amateur 5.67A		License Class A1 as per the Amateur Radio Regulations
5.67 5.67B			

137.8 – 148.5 FIXED MARITIME MOBILE 5.64 5.67	FIXED MARITIME MOBILE 5.64		
148.5 – 255 BROADCASTING 5.68 5.69 5.70	160 – 200 FIXED 5.68 200 – 283.5 AERONAUTICAL RADIONAVIGATION 5.70		

200 - 495 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
255 - 283.5 BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70 5.71	AERONAUTICAL RADIONAVIGATION 5.70	Nav. Aids	
283.5 - 315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74 5.72	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73 5.74		
315 - 325			

AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	Nav. Aids	
Maritime radionavigation (radiobeacons) 5.73	Maritime radionavigation (radiobeacons) 5.73	Coast Radio Telegraph Stations Radionavigation	
5.74 5.72 5.75			
325 – 405			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
5.72			
405 – 415			
RADIONAVIGATION 5.76	RADIONAVIGATION 5.76	Nav Aids	
5.72			
415 – 435			

MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72	MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION		
435 – 495 MARITIME MOBILE 5.79 5.79A Aeronautical Radionavigation 5.72 5.82	MARITIME MOBILE 5.79 5.79A Aeronautical Radionavigation 5.82	Navtex Service on 490 kHz article 31 and 32 of RR 2008 refer	

495 - 1 625 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
495 – 505			
MOBILE 5.82A	MOBILE 5.82A	Distress and Calling	
5.82B	5.82B		
505 - 526.5			
MARITIME MOBILE 5.79	MARITIME MOBILE 5.79	Maritime Radio Telegraphy	
		Navtex Service on 518 kHz article 31 and 32 of RR 2008 refer	
5.79A 5.84	5.79A 5.84		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
5.72			

526.5 - 1 606.5			
BROADCASTING	BROADCASTING	Medium Wave Sound Broadcasting 535.5 - 1606.5 kHz	
5.87 5.87A	Mobile 5.87		
1 606.5 - 1 625			
FIXED	FIXED		
MARITIME MOBILE 5.90	MARITIME MOBILE 5.90		
LAND MOBILE	LAND MOBILE		
5.92	5.92		

1 625 - 2 194 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1 625 - 1 635			
RADIOLOCATION 5.93	RADIOLOCATION	Nav Aids	
1 635 - 1 800			
FIXED	FIXED		
MARITIME MOBILE 5.90	MARITIME MOBILE 5.90	Maritime Radio Telephony	
LAND MOBILE	LAND MOBILE		
5.92 5.96	5.92		
1 800 - 1 810			
RADIOLOCATION	RADIOLOCATION	Nav Aids	
5.93			

1 810 - 1 850			
AMATEUR	AMATEUR		License Class A1 as per the Amateur Radio Regulations
5.98 5.99 5.100 5.101	5.100 5.101		
1 850 - 2 000			
FIXED	FIXED		
MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile	Maritime Mobile Applications	1850 - 1950 is used for Maritime Coast Stations, 1950 - 2045 is used by ship stations SSB Radio Telephony
5.92 5.96 5.103	5.92 5.103		
2 000 - 2 025			
FIXED	FIXED		
MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)	Maritime Mobile Applications	1850 - 1950 is used for Maritime Coast Stations, 1950 - 2045 is used by ship stations SSB Radio Telephony

5.92 5.103	5.92 5.103		
2 025 - 2 045			
FIXED	FIXED		
MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)	Maritime Mobile Applications	1850 - 1950 is used for Maritime Coast Stations, 1950 - 2045 is used by ship stations SSB Radio Telephony
Meteorological aids 5.104	Meteorological aids 5.104		Limited to Oceanographic buoy stations
5.92 5.103	5.92 5.103		
2 045 - 2 160			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
LAND MOBILE	LAND MOBILE		
5.92	5.92		

2 160 - 2 170			
RADIOLOCATION	RADIOLOCATION	Nav Aids	
5.93 5.107	5.107		
2 170 – 2 173.5			
MARITIME MOBILE	MARITIME MOBILE	Distress & Watchkeeping	
2 173.5 - 2 190.5			
MOBILE (Distress and Calling)	MOBILE (Distress and Calling)		
5.108 5.109 5.110 5.111	5.108 5.109 5.110 5.111		
2 190.5 - 2 194			
MARITIME MOBILE	MARITIME MOBILE	Distress & Watchkeeping	

2 194 - 3 230 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
2 194 - 2 300 FIXED MOBILE except Aeronautical Mobile (R) 5.92 5.103 5.112	FIXED MOBILE except Aeronautical Mobile (R) 5.92 5.103		
2 300 - 2 498 FIXED MOBILE except Aeronautical Mobile (R) BROADCASTING 5.113 5.103	FIXED MOBILE except Aeronautical Mobile (R) BROADCASTING 5.113 5.103	Land Mobile and Maritime Applications Sound Broadcasting	
2 498 - 2 501			

STANDARD FREQUENCY AND TIME SIGNAL (25 00 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25 00 kHz)		
2 501 - 2 502			
STANDARD FREQUENCY AND TIME SIGNAL	STANDARD FREQUENCY AND TIME SIGNAL		
Space Research	Space Research		
2 502 - 2 625			
FIXED	FIXED		
MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)	Land Mobile and Maritime Applications	
5.92 5.103 5.114	5.92 5.103		
2 625 - 2 650			
MARITIME MOBILE	MARITIME MOBILE		
MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION	Buoys	

5.92	5.92		
2 650 - 2 850			
FIXED	FIXED	Point to Point Communications	
MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)		
5.92 5.103	5.92 5.103		
2 850 - 3 025			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
5.111 5.115	5.111 5.115		
3 025 - 3 155			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
3 155 - 3 200			

FIXED MOBILE except Aeronautical Mobile (R) 5.116 5.117	FIXED MOBILE except Aeronautical Mobile (R) 5.116		
3 200 - 3 230 FIXED MOBILE except Aeronautical Mobile (R) BROADCASTING 5.113 5.116	FIXED MOBILE except Aeronautical Mobile (R) BROADCASTING 5.113 5.116	Sound Broadcasting	

3 230 - 4 850 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
3 230 - 3 400 FIXED MOBILE except aeronautical Mobile BROADCASTING 5.113 5.116	FIXED MOBILE except aeronautical Mobile BROADCASTING 5.113 5.116	Sound Broadcasting	
3 400 - 3 500 AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
3 500 - 3 800 AMATEUR FIXED	AMATEUR FIXED		License Class A1,A2,B as per the Amateur Radio Regulations

MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile		
5.92			
3 800 - 3 900			
FIXED	FIXED		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
LAND MOBILE	LAND MOBILE		
3 900 - 3 950			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
	BROADCASTING		
5.123	5.123		
3 950 - 4 000			
FIXED	FIXED		

BROADCASTING	BROADCASTING	Sound Broadcasting	
4 000 - 4 063			
FIXED	FIXED		
MARITIME MOBILE 5.127	MARITIME MOBILE 5.127	Ship Stations Radiotelephony	
4 063 - 4 438			
MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132	Navtex Service on 4 209.5 kHz article 31 and 32 of RR 2008 refer	
4 438 - 4 650			
FIXED	FIXED		
MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)		
4 650 - 4 700			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		

4 700 - 4 750			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
4 750 - 4 850			
FIXED	FIXED		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
LAND MOBILE	LAND MOBILE		
BROADCASTING 5.113	BROADCASTING 5.113	Sound Broadcasting	

4 850 - 6 765 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
4 850 - 4 995			
FIXED	FIXED		
LAND MOBILE	LAND MOBILE		
BROADCASTING 5.113	BROADCASTING 5.113	Sound Broadcasting	
4 995 - 5 003			
STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)		
5 003 - 5 005			
STANDARD FREQUENCY AND TIME SIGNAL	STANDARD FREQUENCY AND TIME SIGNAL		
Space Research	Space Research		
5 005 - 5 060			

FIXED	FIXED		
BROADCASTING 5.113	BROADCASTING 5.113	Sound Broadcasting	
5 060 - 5 250			
FIXED	FIXED		
Mobile except Aeronautical Mobile 5.133	Mobile except Aeronautical Mobile		
5 250 - 5 450			
FIXED	FIXED		
MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile		
5 450 - 5 480			
FIXED	FIXED		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		

LAND MOBILE	LAND MOBILE		
5 480 - 5 680			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
5.111 5.115	5.111 5.115		
5 680 - 5 730			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
5.111 5.115	5.111 5.115		
5 730 - 5 900			
FIXED	FIXED		
LAND MOBILE	LAND MOBILE		
5 900 - 5 950			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	

Fixed 5.136	Fixed 5.136		
Land Mobile 5.136	Land Mobile 5.136		
5 950 - 6 200			
BROADCASTING	BROADCASTING	Sound Broadcasting	
6 200 - 6 525			
MARITIME MOBILE 5.109 5.110 5.130 5.132	MARITIME MOBILE 5.109 5.110 5.130 5.132	DSC (GMDSS) Distress Watchkeeping Ship to shore radiotelephony. Inter-ship Cross Band on 6215 & 6312 kHz	Distress Watchkeeping in Appendix 15 of RR 2008 refers Radiotelephony Distress Channelized in Appendix 17 of RR 2008 refers
5.137	5.137		
6 525 - 6 685			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		

6 685 - 6 765			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		

6 765 – 9 900 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
6 765 - 7 000 FIXED MOBILEexcept Aeronautical mobile (R) 5.138 5.138A 5.139	FIXED MOBILEexcept Aeronautical mobile (R) 5.138 5.138A	ISM application	Government Gazette No 31290, Notice No 926 of 2008 refers
7 000 - 7 100 AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	AMATEUR AMATEUR-SATELLITE		License Class A1,A2,B as per the Amateur Radio Regulations
7 100 - 7 200			

AMATEUR 5.141A 5.141B	AMATEUR		License Class A1,A2,B as per the Amateur Radio Regulations
5.141C	5.141C		
7 200 - 7 300			
BROADCASTING	BROADCASTING	Sound Broadcasting	
7 300 - 7 400			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
	Fixed 5.143		Non Interference Basis to Broadcasting
	Land Mobile 5.143		Non Interference Basis to Broadcasting
5.143 5.143B 5.143C	5.143B		
7 400 - 7 450			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	

	Fixed 5.143		Non Interference Basis to Broadcasting
5.143B 5.143C	5.143B		
7 450 – 8 100			
FIXED	FIXED		
MOBILE Except Aeronautical mobile(R)	MOBILE Except Aeronautical mobile (R)		
5.143 E	5.143E		
8 100 – 8 195			
FIXED	FIXED		
MARITIME MOBILE	MARITIME MOBILE		
8 195 – 8 815			

MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	DSC (GMDSS) Distress Watchkeeping on 8 414.5 kHz.	Distress Watchkeeping in Appendix 15 of RR 2008 refers.
		Radiotelephony Distress on 8 291 kHz used for ship to shore and inter-ship Cross Band.	Radiotelephony Distress Channelized in Appendix 17 of RR 2008 refers.
8 315 – 8 965			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
8 965-9 040			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
9 040 - 9 400			
FIXED	FIXED		
9 400 - 9 500			
BROADCASTING 5.134 5.146	BROADCASTING 5.134 5.146	Sound Broadcasting	

9 500 - 9 900			
BROADCASTING	BROADCASTING	Sound Broadcasting	
5.147	5.147		

9 900 - 13 360 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
9 900 - 9 995			
FIXED	FIXED		
9 995 - 10 003			
STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)		
5.111	5.111		
10 003 - 10 005			
STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)		
Space Research	Space Research	Passive Sensing	
5.111	5.111		
10 005 - 10 100			

AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
5.111	5.111		
10 100 - 10 150			
FIXED	FIXED		
Amateur	Amateur		License Class A1 as per the Amateur Radio Regulations
10 150 - 11 175			
FIXED	FIXED		
Mobile except Aeronautical Mobile (R)	Mobile except Aeronautical Mobile (R)		
11 175 - 11 275			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
11 275 - 11 400			

AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
11 400 - 11 600			
FIXED	FIXED		
11 600-11 650			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.146	5.146		
11 650 - 12 050			
BROADCASTING	BROADCASTING	Sound Broadcasting	
5.147	5.147		
12 050 - 12 100			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.146	5.146		

12 100 - 12 230			
FIXED	FIXED		
12 230 - 13 200			
MARITIME MOBILE	MARITIME MOBILE		
5.109 5.110 5.132 5.145	5.109 5.110 5.132 5.145		
13 200 - 13 260			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
13 260 - 13 360			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		

13 360 - 15 800 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
13 360 - 13 410 FIXED RADIO ASTRONOMY 5.149	FIXED RADIO ASTRONOMY NF2 5.149		
13 410 - 13 570 FIXED Mobile except Aeronautical Mobile (R)	FIXED Mobile except Aeronautical Mobile (R)	ISM	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer

		13 553 - 13 567 kHz inductive loop including RFID and EAS Systems only	
5.150	5.150		
13 570 - 13 600			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.151	5.151		
13 600 - 13 800			
BROADCASTING	BROADCASTING	Sound Broadcasting	
13 800 - 13 870			
BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.151	5.151		

13 870 - 14 000			
FIXED	FIXED		
Mobile except Aeronautical Mobile (R)	Mobile except Aeronautical Mobile (R)		
14 000 - 14 250			
AMATEUR	AMATEUR		License Class A1 and A2 as per the Amateur Radio Regulations
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
14 250 - 14 350			
AMATEUR	AMATEUR		License Class A1, A2 as per the Amateur Radio Regulations
5.152			
14 350 - 14 990			
FIXED	FIXED		

Mobile except Aeronautical Mobile (R)	Mobile except Aeronautical Mobile (R)		
14 990 - 15 005			
STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111		
15 005 - 15 010			
STANDARD FREQUENCY AND TIME SIGNAL	STANDARD FREQUENCY AND TIME SIGNAL		
Space Research	Space Research		
15 010 - 15 100			
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
15 100 - 15 600			
BROADCASTING	BROADCASTING	Sound Broadcasting	
15 600 - 15 800			

BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.146	5.146		

15 800 – 19 995 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
15 800 – 16 360 FIXED	FIXED		
16 360 – 17 410 MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE 5.109 5.110 5.132 5.145	DSC (GMDSS) Distress Watchkeeping on 16 804.5 kHz. Radio Telephony Distress Watch on 16 240 kHz Ship Station Radio Telegraphy	Distress Watchkeeping Channelized in Appendix 15 of the Maritime Safety Information Channelized in Appendix 17
17 410 – 17 480 FIXED	FIXED		
17 480 – 17 550 BROADCASTING 5.134	BROADCASTING 5.134	Sound Broadcasting	
5.146	5.146		

17 550 – 17 900			
BROADCASTING	BROADCASTING		
17 900 – 17 970			
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
18 030 18 052			
FIXED	FIXED		
18 052 – 18 068			
FIXED	FIXED		
Space Research	Space Research		
18 068 – 18 168			
AMATEUR	AMATEUR		
AMATEUR SATELLITE			License Class A1 as per the Amateur Radio Regulations
5.154			

18 168 – 18 780			
FIXED	FIXED		
Mobile except Aeronautical Mobile	Mobile except Aeronautical Mobile		
18 780 – 18 900			
MARITIME MOBILE	MARITIME MOBILE		
18 900 – 19 020			
BROADCASTING 5.134	BROADCASTING 5.134		
5.146	5.146		
19 020 – 19 680			
FIXED	FIXED		
19 680 – 19 800			
MARITIME MOBILE	Maritime mobile		
5.132	5.132		
19 800 – 19 990			

FIXED	FIXED		
19 990- 19 995			
STANDARD FREQUENCY AND TIME SIGNAL (25 000 KHZ)	STANDARD FREQUENCY AND TIME SIGNAL (25 000 KHZ)		
Space Research	Space Research		
5.111	5.111		

19 995 - 25 005 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
19 995 - 20 010			
STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)		
20 010 - 21 000			
FIXED	FIXED		
Mobile	Mobile		
21 000 - 21 450			
AMATEUR	AMATEUR		License Class A1 and A2 as per the Amateur Radio Regulations
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
21 450 - 21 850			

BROADCASTING	BROADCASTING	Sound Broadcasting	
21 850 - 21 870			
FIXED 5.155A	FIXED		
5.155			
21 870 - 21 924			
FIXED 5.155B	FIXED 5.155B		
21 924 - 22 000			
AERONAUTICAL MOBILE (R)	AERONAUTICALMOBILE (R)		
22 000 - 22 855			
MARITIME MOBILE 5.132	MARITIME MOBILE		
5.156	5.132		
22 855 - 23 000			

FIXED	FIXED		
5.156			
23 000 - 23 200			
FIXED	FIXED		
Mobile except Aeronautical mobile (R)	Mobile except Aeronautical mobile (R)		
5.156			
23 200 - 23 350			
FIXED 5.156A	FIXED 5.156A		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
23 350 - 24 000			
FIXED	FIXED		

MOBILE except Aeronautical mobile 5.157	MOBILE except Aeronautical mobile 5.157		
24 000 - 24 890 FIXED LAND MOBILE	 FIXED LAND MOBILE		
24 890 - 24 990 AMATEUR AMATEUR-SATELLITE	 AMATEUR AMATEUR-SATELLITE		License Class A1 as per the Amateur Radio Regulations
24 990 - 25 005 STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	 STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		

25 005 kHz - 30 010 kHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
25 005 - 25 010 STANDARD FREQUENCY AND TIME SIGNAL Space Research	STANDARD FREQUENCY AND TIME SIGNAL Space Research		
25 010 - 25 070 FIXED MOBILE except Aeronautical Mobile	FIXED MOBILE except Aeronautical Mobile		
25 070 - 25 210 MARITIME MOBILE	MARITIME MOBILE		
25 210 - 25 550 FIXED	FIXED		

MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile		
25 550 - 25 670			
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
25 670 - 26 100			
BROADCASTING	BROADCASTING	Sound Broadcasting	
26 100 - 26 175			
MARITIME MOBILE 5.132	MARITIME MOBILE 5.132		
26 175 - 27 500			

MOBILE except Aeronautical	MOBILE except Aeronautical	Single Frequency Mobile	Includes Frequency assignments for low power paging in 26.957 27.283 and CB radio in 27.184-27.275 CB radio in 27.184-27.275 - Government Gazette No 31290. Notice No 926 of 2008 refers
Mobile	Mobile	26.175 – 27.5 MHz Inductive loop system. 26.957-27.283 MHz Non-specific SRD's. 26.957-27.283 MHz Surface model control and ISM applications.	
FIXED	FIXED		
5.150	5.150		
27 500 - 28 000			

METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radio Sounding	
FIXED	[FIXED]		
MOBILE	MOBILE		
28 000- 29 700			
AMATEUR	AMATEUR		License Class A1, A2 and B as per the Amateur Radio Regulations
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
29 700 - 30 005			
FIXED	FIXED		
MOBILE	MOBILE NF3	29.7 – 29.99 MHz Single Frequency Mobile	
		Government Services	
30 005 - 30 010			

SPACE OPERATION (satellite identification)	SPACE OPERATION (satellite identification)		
FIXED	FIXED	Government Services	
MOBILE	MOBILE		
SPACE RESEARCH	SPACE RESEARCH		

PART B: 30 MHz - 390 MHz

30.01 – 40.98 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
30.01 - 37.5			
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 32 - 32.325 MHz	Government Services
		Mobile 1 MTX 32.325-33.675 MHz	Paired with 41.65 - 43 MHz
		Single Frequency Mobile 33.675-34.175 MHz	
		Mobile 2 MTX 34.175 – 35 MHz	Paired with 40.625 – 41.45 MHz
		Model Aircraft Control 35 – 35.5 MHz	Exclusive use by Model Aircraft Control
		Wireless microphone 36.65 – 36.75 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers

		Single Frequency Mobile 33.25 - 33.5 MHz	
		Mobile 3 BTX 35.5 – 36.825 MHz	Paired with 38.5 – 39.825 MHz
		Single Frequency Mobile 36.825 – 38.5 MHz	Government Services
37.5 - 38.25			
FIXED			
MOBILE	MOBILE	Single Frequency 36.825 – 38.5 MHz	
Radio astronomy 5.149	Radio Astronomy 5.149		
38.25 - 39.986			
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 36.825 – 38.5 MHz	Government Services
		Mobile 3 MTX 38.5 – 39.825 MHz	Paired with 35.5 – 36.825 MHz

		Single Frequency Mobile 39.825 – 40.625 MHz	
39.986 - 40.02			
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 39.825 – 40.625 MHz	
Space research			
40.02 - 40.98			
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 39.825 – 40.625 MHz	
		Mobile 2 BTX 40.625 – 41.45 MHz	Paired with 34.175 – 35
		Wireless microphones 40.65 – 40.7 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers.

5.150	5.150	Non specific SRD's 40.66 – 40.7 MHz ISM	40.66 - 40.7 MHz (RR Footnote 5.150 refers)
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40.98 – 75.2 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
40.98 - 41.015			
FIXED			
MOBILE	MOBILE	Mobile 2 BTX 40.625 – 41.45 MHz	Paired with 34.175 – 35 MHz
Space research	Space Research		
5.160			
41.015 – 44			
FIXED			
MOBILE	MOBILE	Mobile 2 BTX 40.625 – 41.45 MHz	Paired with 34.175 - 35 MHz
		Single Frequency Mobile 41.45 – 41.65 MHz	
		Mobile 1 BTX 41.65 - 43 MHz	Paired with 32.325 – 33.675 MHz

5.160		Government Services	
44 - 47 MHz			
FIXED	FIXED	Meteor Burst 45.3 - 46.9	Paired with 47.5 – 49.1 MHz
MOBILE	MOBILE	CT0 Cordless Telephones BTX 46.61 - 46.97 MHz	10 frequency pairs assigned to CT0. Paired with 49.67 - 49.97 MHz. Government Gazette No 31290, Notice No 926 of 2008 refers
5.162A		Government Services	
47- 68 MHz			
BROADCASTING	FIXED 5.171	CT0 Cordless Telephones MTX 49.67 - 49.97 MHz	10 frequency pairs assigned to CT0. Paired with 49.67 - 49.97 MHz. Government Gazette No 26193, Notice No 533 of 24 March 2004 refers

54 – 68 MHz MOBILE 5.171	Government Service	
	Wireless microphones 53 -54 MHz Model Control 54 - 54.325 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers
	Single Frequency Mobile 54 - 54.325 MHz	
	Mobile 1 BTX 54.325 - 54.45 MHz	Paired with 59.9 - 60.025 MHz
	Mobile 2 BTX 55.45 - 56.85 MHz	Paired with 58.5 - 59.9 MHz
	Single Frequency Mobile 56.85 - 58.5 MHz	
	Mobile 2 MTX 58.5 - 59.9 MHz	Paired with 55.45 - 56.85 MHz
	Mobile 1 MTX 59.9 - 60.025 MHz	Paired with 54.325 - 54.45 MHz
	Sport Stadium Communication on 62.8 and 62.850 MHz	
	66 - 68 MHz National Emergency Alarm Radio (NEAR)	

5.162A 5.163 5.164 5.165 5.169 5.171	AMATEUR 5.169 5.164	Amateur Radio Communication 50 - 54 MHz	License Class A1,A2 as per the Amateur Radio Regulations
68 - 74.8 MHz FIXED MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile	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	 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

5.149 5.175 5.177 5.179	AMATEUR NF4 Radio astronomy on 73 - 74.6 MHz 5.149	Single Frequency Mobile 72.525 - 73.425 MHz Mobile 4 BTX 73.425 - 74.8 MHz Amateur Radio Communication 70 - 70.3 MHz	Paired with 78.625 - 80 MHz License Class A1,A2,B as per the Amateur Radio Regulations
74.8 - 75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	AERONAUTICAL RADIONAVIGATION 5.180	Instrument Landing System markers 74.80-75.20 MHz	

75.2 – 87.5 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
75.2 - 87.5 MHz			
FIXED			
MOBILE except Aeronautical Mobile	MOBILE except Aeronautical Mobile	Mobile 2 MTX 75.2 - 76.175 MHz	Paired with 70 - 70.975 MHz
		Mobile 1 MTX 76.175 - 76.925 MHz	Paired with 69.25 - 70 MHz
		Mobile 3 MTX 76.925 - 77.975 MHz	Paired with 71.475 - 72.525 MHz
		Mobile 4 MTX 78.625 – 80 MHz	Paired with 73.425 - 74.8 MHz
		Mobile 5 BTX 77.975 - 78.625 MHz	Paired with 82.975 - 83.625 MHz
		Mobile 6 BTX 80 - 80.5 MHz	Paired with 87 - 87.5 MHz
		Single Frequency Mobile 80.5 – 81 MHz	

5.175 5.179 5.187	Mobile 7 BTX 81 - 81.625 MHz	Paired with 86.375 - 87 MHz
	Mobile 8 BTX 81.625 - 82.975 MHz	Paired with 85.025 - 86.375 MHz
	Mobile 5 MTX 82.975 - 83.625 MHz	Paired with 77.975 - 78.625 MHz
	Single Frequency Mobile 83.625 - 85.025 MHz	
	Mobile 8 MTX 85.025 - 86.375 MHz	Paired with 81.625 - 82.975 MHz
	Mobile 7 MTX 86.375 - 87 MHz	Paired with 81 - 81.625 MHz
	Mobile 6 MTX 87 - 87.5 MHz	Paired with 80 - 80.5 MHz

87.5 – 137.175 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
87.5 - 100 MHz BROADCASTING 5.190	BROADCASTING	Sound Broadcasting	
100 - 108 MHz BROADCASTING 5.194	BROADCASTING	Sound Broadcasting	
108 - 117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	AERONAUTICAL RADIONAVIGATION 5.197A	108 - 112 MHz ILS localiser 112-117.975 MHz VOR (VHF Omnidirectional Range)	
117.975 - 137 MHz			

AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
5.111 5.200 5.201 5.202	5.111 5.200		
137 - 137.025 MHz			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	MET SAT	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.208B	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.208B		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed	FIXED		
Mobile except Aeronautical mobile (R)	Mobile except Aeronautical mobile (R)		
5.205 5.206 5.208	5.208		

137.025 - 137.175 MHz			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed			
Mobile-satellite (space-to-Earth) 5.208A 5.209 5.208B	Mobile-satellite (space-to-Earth) 5.208A 5.209 5.208B		
Mobile except Aeronautical mobile (R)	Mobile except Aeronautical mobile (R)		
5.205 5.206 5.208	5.208		

137.175 – 143.6 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
137.175 - 137.825 MHz			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	NOAA meteorological satellite 137.5 - 137.62 MHz	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.208B	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 5.208B		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed			
Mobile except Aeronautical mobile (R)	Mobile except Aeronautical mobile (R)		
5.205 5.206 5.208	5.208		

137.825 - 138 MHz			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
Fixed			
Mobile-satellite (space-to-Earth) 5.208A 5.209 5.208B	Mobile-satellite (space-to-Earth) 5.208A 5.209 5.208B		
Mobile except Aeronautical mobile (R)	Mobile except Aeronautical mobile (R)		
5.205 5.206 5.208	5.208		
138 - 143.6 MHz			

AERONAUTICAL MOBILE (OR)	Fixed	Single Frequency Alarms 140.5 – 141 MHz	
	MOBILE	Mobile 1 MTX 138 - 140.5 MHz	Paired with 141.5 - 144 MHz Allocation includes MTX assignments at 138 - 138.425 MHz and 138.475 - 138.95 MHz
		Single Frequency Mobile 141 - 141.5 MHz	
		Mobile 1 BTX 141.5 – 144 MHz	Paired with 138 - 140.5 MHz Allocation includes BTX assignments at 142.8 - 143.275 MHz and 143.325 - 143.975 MHz
		Remote control industrial apparatus 141 – 142 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers
5.210 5.211 5.212 5.214	5.212		

143.6 – 149.9 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
143.6 – 143.65 MHz AERONAUTICAL MOBILE (OR)	MOBILE	Mobile 1 BTX 141.5 – 144 MHz	Paired with 138 - 140.5 MHz Allocation includes BTX assignments at 142.8 - 143.275 MHz and 143.325 - 143.975 MHz
SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	SPACE RESEARCH (space-to-Earth) 5.212		
143.65 - 144 MHz AERONAUTICAL MOBILE (OR)			

5.210 5.211 5.212 5.214	MOBILE 5.212	Mobile 1 BTX 141.5 – 144 MHz	Paired with 138 - 140.5 MHz Allocation includes BTX assignments at 142.8 - 143.275 MHz and 143.325 - 143.975 MHz
144 - 146 MHz AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE		
146 - 148 MHz FIXED MOBILE except Aeronautical Mobile (R)	MOBILE except Aeronautical Mobile (R)	Mobile 2 MTX 146 – 148.95 MHz	Paired with 153.05 - 156 MHz
148 - 149.9 MHz FIXED			

MOBILE except Aeronautical mobile (R)	MOBILE except Aeronautical mobile (R) NF 7	Mobile 2 MTX 146 - 148.95 MHz	Paired with 153.05 – 156 MHz
		Single Frequency Mobile 148.950 - 151 MHz	
		Wildlife telemetry Tracking 148 – 152 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers
MOBILE-SATELLITE (Earth-to- space) 5.209	MOBILE-SATELLITE (Earth-to- space) 5.209		
		Low Earth Orbit (Earth-to-space)	Systems are paired with either 137 – 138 MHz or 400.15 – 401 MHz
5.218 5.219 5.221	5.218 5.219 5.221		

149.9 – 154 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
149.9 - 150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	Low Earth Orbit	
150.05 - 153 MHz FIXED MOBILE except Aeronautical mobile	FIXED MOBILE except Aeronautical mobile NF8	Single Frequency Alarms 152.05-152.55 MHz Alarms, Single Frequency Mobile and Load shedding 148.950 - 151 MHz Government Services	Channels 150.550 MHz & 150.5625 MHz are used for load shedding Channels 150.625, 150.650 and 150.675 MHz are reserved for in-house paging

		Wildlife telemetry Tracking 148 – 152 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers
		Single Frequency Mobile 152.55 - 153.05 MHz	
RADIO ASTRONOMY	RADIO ASTRONOMY NF2		
5.149	5.149		
153 - 154 MHz			
FIXED			
MOBILE except Aeronautical mobile (R)	MOBILE except Aeronautical mobile (R)	Single Frequency Mobile 152.55 - 153.05 MHz	
		Mobile 2 BTX 153.05 – 156 MHz	Paired with 146 - 148.95 MHz
Meteorological Aids	Meteorological Aids		

154 – 174 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
154 - 156.4875 FIXED MOBILE except Aeronautical mobile (R)	MOBILE except Aeronautical mobile (R)	Mobile 2 BTX 153.05 – 156 MHz Mobile 3 MTX 156 - 156.7625 MHz	Paired with 146 - 148.95 MHz 156 - 156.375 MHz allocated to land mobile MTX in inland areas (paired with 160.6 - 160.975 MHz) 156.375 - 156.7625 MHz allocated to SF mobile in inland areas
156.4875 – 156.5625 MARITIME MOBILE (distress and calling via DSC)	MARITIME MOBILE (distress and calling via DSC) FIXED	Maritime Radionavigation and Location (Radar)	The use of this band by the Maritime services shall be in accordance with ITU Appendix 18. Non Interference basis and Non Protection Basis to Maritime Mobile Services

5.111 5.226	MOBILE	Single frequency mobile 156.375 MHz– 156.7625 MHz in inland areas	Non Interference basis and Non Protection Basis to Maritime Mobile Services
5.227	5.111 5.226		
156.5625 – 156.7625	5.227		
FIXED	FIXED		
MOBILE except Aeronautical mobile(R)	MOBILE except Aeronautical mobile(R)		
5.226	5.226		
156.7625 - 156.8375			
MARITIME MOBILE (distress and calling)	MARITIME MOBILE (distress and calling)	Maritime Radionavigation and Location (Radar)	
5.111 5.226	5.111 5.226		
156.8375 – 174			

FIXED				The use of this band by the Maritime services shall be in accordance with ITU Appendix 18
MOBILE except Aeronautical mobile (R)	MOBILE except aeronautical mobile (R)	Mobile 1 MTX-DF 161.475 - 165.0375 MHz	Paired with Mobile 1 BTX - DF 156.875 160.4375 MHz	
		Single Frequency Mobile 160.45 - 161.4625 MHz		
		Mobile 2 MTX-DF 165.05 - 165.5375 MHz	Paired with Mobile 2 BTX - DF 170.50 - 170.5375 MHz	
	Mobile Satellite Services (Earth to Space) 5.227A			
		Single frequency Mobile 168.95 - 170.0375 MHz		
	NF9	Mobile 3 MTX-DF 165.55 - 167.4875 MHz	Paired with Mobile 3 BTX- DF 172.05 - 173.9875 MHz	
		Single Frequency Mobile 172 - 172 0375 MHz		

5.226 5.229. 5.227	5.226	Mobile 4 MTX-DF 167.5 - 168.9375 Non-specific SRD – Telecommand only 173.2125 – 173.2375 MHz Non-specific SRD 173.2375 – 173.2875 MHz Wireless microphones 173.7 – 175.1 MHz	Paired with Mobile 4 BTX 170.55 - 171.9875 MHz Government Gazette No 31290, Notice No 926 of 2008 refers Government Gazette No 26193, Notice 533 of 24 March 2004 refers Government Gazette No 26193, Notice 533 of 24 March 2004 refers The band 156.8375 - 156.875 MHz is allocated to SF mobile inland areas. Private maritime MTX at 157.45 - 157.95 MHz paired with 162.05 - 162.55 MHz
174 – 223 BROADCASTING	BROADCASTING	Television Broadcasting 174 - 238 MHz	

5.235 5.237 5.243	NF10		
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223 - 272 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
223 - 230 MHz BROADCASTING Fixed Mobile 5.243 5.246 5.247	BROADCASTING NF10	Television Broadcasting 174 - 238 MHz	Broadcasting Allocations in accordance with GE 89 plan in the process of conversion to GE 06
230 - 235 MHz FIXED MOBILE			

5.247 5.251 5.252	BROADCASTING 5.252 NF10	Television Broadcasting 174 - 238 MHz	Broadcasting Allotments in accordance with GE 89 plan in the process of conversion to GE 06
235 - 267 MHz			
FIXED			
MOBILE	BROADCASTING 5.252 NF10	Television Broadcasting 246 - 254 MHz	Broadcasting Allotments in accordance with GE 89 plan in the process of conversion to GE 06
		Digital Audio Broadcasting (T-DAB) 238.4 - 239.9 MHz	The allocation to T-DAB is temporary. This is to allow field testing on Eureka 147 standard to take place in South Africa.
	MOBILE	International Distress Frequency 242.95 – 243.05 MHz (centre at 243 MHz)	
		Public Trunking (MPT 1327) BTX 254 - 259.4 MHz	Paired with 262 – 267.4 MHz
		Government Services	

5.111 5.252 5.254 5.256 5.256A	5.111 5.256 5.524	Public Trunking (MPT 1327) MTX 262 - 267.4 MHz	Paired with 254 – 259.4 MHz
267 - 272 MHz			
FIXED			
MOBILE	MOBILE	Public Trunking (MPT 1327) MTX 262 - 267.4 MHz	Paired with 254 – 259.4 MHz
Space operation (space-to-Earth)			
5.254 5.257	5.254 5.257	Government Services	

272 – 390 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
272 - 273 MHz SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	MOBILE 5.254	Government Services	
273 - 312 MHz FIXED MOBILE 5.254	MOBILE 5.254	Government Services Single Frequency Mobile 278 – 286 MHz	

312 - 315 MHz			
FIXED			
MOBILE	MOBILE	Government Services	
Mobile-satellite (Earth-to-space) 5.254 5.255	5.254		
315 - 322 MHz			
FIXED			
MOBILE	MOBILE	Government Services	
5.254	5.254		
322 - 328.6 MHz			
FIXED			
MOBILE	MOBILE	Government Services	
RADIO ASTRONOMY	RADIO ASTRONOMY		

5.149	5.149		
328.6 - 335.4 MHz			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	ILS Glide Path 328.6 - 335.4 MHz	
5.258 5.259	5.258		
335.4 - 387 MHz			
FIXED	FIXED NF11	FWA 336 - 346 MHz	Paired with 356 - 366 MHz
			364 - 366 MHz DSSS 344 - 346
		WAS 357-364 MHz	Paired with 337-344MHz
		336 - 337 MHz	Paired with 356 - 357 MHz
MOBILE 5.254	MOBILE 5.254		
		Digital Trunking (Emergency) 380 - 387 MHz	Paired with 390 - 397 MHz

	NF12		
387 - 390 MHz			
FIXED			
MOBILE	MOBILE	Digital Trunking 387 – 390 MHz	Paired with 397– 399.9 MHz
Mobile-satellite (space-to-Earth)			
5.208A 5.254 5.255 5.208B	5.208B 5.254		

PART C: 390 MHz - 890 MHz

390 - 402 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
390 - 399.9 MHz FIXED MOBILE 5.254	MOBILE 5.254 NF12	Digital Trunking (Emergency) 390 -397MHz Public Protection Digital Radio 380 - 385 MHz Digital Trunking 397-399.9 MHz	Paired with 380 – 387MHz paired with 390 - 395 MHz Paired with 387– 390 MHz
399.9 – 400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A		

RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260	RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260		
5.220	5.220		
400.05 - 400.15 MHz			
STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)		
5.261 5.262	5.261		
400.15 - 401 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)	Radio Sounding	
MOBILE-SATELLITE (space-to- Earth) 5.208A 5.209 5.208B	MOBILE-SATELLITE (space-to- Earth) 5.208A 5.209 5.208B		
SPACE RESEARCH (space-to- Earth) 5.263	SPACE RESEARCH (space-to- Earth) 5.263		

Space operation (space-to-Earth)	Space operation (space-to-Earth)		
5.262 5.264	5.264		
401-402 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radio Sondes	
		Data uplink to Geostationery Satellite Orbit.	
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
EARTH EXPLORATION-SATELLITE (Earth-to-space)			
METEOROLOGICAL-SATELLITE (Earth-to-space)			
Fixed			
Mobile except aeronautical mobile			

402 – 410 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
402 - 403 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radio Sondes	
EARTH EXPLORATION- SATELLITE (Earth-to-space)			
METEOROLOGICAL-SATELLITE (Earth-to-space)			
Fixed			
Mobile except aeronautical mobile		Medical Implants 402 – 405 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers
		Various SRD's 402 – 406 MHz	

403 - 4 06 MHz			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radiosondes	
Fixed			
Mobile except aeronautical mobile		Medical Implants 402 – 405 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers
		Short Range Devices 402 – 406 MHz	
406 - 406.1 MHz			
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	Emergency Position Indicating Radio Beacon (EPIRB)	Public Locator Beacon
5.266 5.267	5.266 5.267		
406.1 - 410 MHz			

FIXED	FIXED	Fixed Links 406.1 – 407.625 MHz	Paired with 416.1 – 417.625 MHz
		Fixed links 407.625 – 410 MHz	Paired with 417.625 – 420 MHz
		Mobile MTX 406.1 - 407.625 MHz	Paired with 416.1 – 417.625 MHz
		Mobile MTX 407.625 – 410 MHz	Paired with 417.625 - 420 MHz Allocated for Government use and Disaster Relief
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Mobile MTX 410- 413 MHz	Paired with 420- 423 MHz Digital Trunking
	NF13		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		

410 – 430 MHz

ITU Region 1	South African	Typical Applications	Notes and Comments
410 - 420 MHz			
FIXED	FIXED	413 - 416.1 MHz	Paired with 423 - 426.1 MHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Mobile MTX 407.625 – 413 MHz	Paired with 417.625 - 423 MHz Allocation for Government Services
		Mobile Data MTX 413 - 413.7625 MHz	Paired with 423 - 423.7625 MHz
	NF13	Public Trunking MTX 413.7625 - 416.1 MHz	Paired with 423.7625 - 426.1 MHz Public Digital Trunking
		Mobile BTX 416.1 – 417.625 MHz	Paired with 406.1 - 407.625 MHz

SPACE RESEARCH (space-to-space) 5.268	SPACE RESEARCH (space-to-space) 5.268		
420 - 430 MHz			
FIXED	FIXED	Single Frequency Links 426.1 - 430 MHz	Frequencies will only be assigned for SF links where migration above 1 GHz would be impractical
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Trunked Mobile BTX 420 - 423 MHz	Paired with 410 - 413 MHz Digital Trunked Mobile radio for Government use
		Public Mobile Data BTX 423 - 423.7625 MHz	Paired with 413 - 413.7625 MHz
		Public Trunking BTX 423.7625 - 426.1 MHz	Paired with 413.7626 - 416.1 MHz Public Trunking using digital mobile radio
Radiolocation	NF13		
5.269			

430 – 450 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
430 - 432 MHz AMATEUR RADIOLOCATION 5.272 5.273 5.274 5.275 5.276 5.277	AMATEUR 430 – 440 MHz NF14		
432 - 438 MHz AMATEUR 5.282 RADIOLOCATION Earth exploration-satellite (active) 5.279A	AMATEUR 430 – 440 MHz NF14 5.138 Amateur Satellite NF14	Amateur-Satellite	Subject to conditions in RR 5.282

5.138 5.272 5.276 5.277 5.280 5.281	Mobile	ISM 433.05 – 434.79 MHz Non Specific SRD including RFID	2008 RR 5.138, government Gazette No 31127, Notice No 713 of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer *
438 - 440 MHz AMATEUR RADIOLOCATION 5.273 5.274 5.275 5.276 5.277 5.283	AMATEUR NF14		License Class A1,A2,B as per the Amateur Radio Regulations
440 - 450 MHz FIXED	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.

		Telemetry / Data MTX 445 - 446 MHz	Paired with 440 - 441 MHz (BTX)
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Single Frequency Mobile 441 - 441.1 MHz	Channels 440 - 440.100 and 445.00 - 445.100 MHz are used as simplex. Channels 440.275, 440.2875, 445.2750, 445.2875, 440.375 and 445.375 MHz are roving simplex channels.
		Mobile BTX 441.1 - 445 MHz	Paired with 446.1 - 450 MHz (MTX)
		Mobile: PMR 446 446 - 446.1 MHz	8 channels as contained in Government Gazette No. 31290 Notice No. 926 of 208
		Mobile 446.1 - 450 MHz	Paired with 441.1 - 445 MHz
Radiolocation			
5.269 5.270 5.286	NF15		
450 - 455 MHz			
FIXED	FIXED NF15	Fixed Links 450 - 453 MHz	Paired with 460 - 463 MHz

MOBILE 5.286AA	MOBILE 5.286AA	Single Frequency Mobile 453.025 - 453.975 MHz	Government Services
		Paging 453.975 - 454.425 MHz	
		Trunked Mobile BTX 454.425 - 460 MHz	Paired with 464.425 - 470 MHz
5.209 5.286 [5.5.286B 5.286C 5.5.286E	5.209 NF16		
455 - 456 MHz			
FIXED	FIXED		
	NF15		
MOBILE 5.286AA	MOBILE 5.286AA NF16	Trunked Mobile BTX 454.425 - 460 MHz	Paired with 464.425 - 470 MHz
			Government Services

5.209 5.286B			
5.286C 5.286E	5.209		
456 - 459 MHz			
FIXED	FIXED		
	NF15		
MOBILE 5.286AA	MOBILE 5.286AA NF16	Trunked Mobile BTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz
			Government Services
5.271 5.287 5.288	5.286AA 5.287		

459 – 862 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
459 - 460 MHz FIXED MOBILE 5.286AA 5.209 5.286B 5.286C 5.286E	FIXED NF15 MOBILE 5.286AA NF16 5.209	Trunked Mobile BTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz Government Services
460-470 MHz FIXED MOBILE 5.286AA	FIXED NF15 MOBILE 5.286AA NF16	Fixed Links 460 – 463 MHz Single Frequency Mobile 463.025 – 463.975 MHz	Paired with 450 - 453 MHz

Meteorological-Satellite (space-to-Earth) 5.287 5.288 5.289	5.287	Low Power Mobile Radio 463.975 - 464.425 MHz Trunked Mobile MTX 464.425 – 470 MHz	Government Gazette No 31290, Notice No 926 of 2008 refers 464.375 - 464.425 MHz to be dedicated for control of hazardous equipment Paired with 454.425 - 460 MHz Government Services
470 - 790 MHz BROADCASTING	BROADCASTING RADIO ASTRONOMY	Television Broadcasting 470 – 854 MHz Radio astronomy 606 -614 MHz	Broadcasting Allotments in accordance with GE 89 plan in the process of conversion to GE 06

5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311A 5.312	5.149 5.304 5.311A		
790 - 862 MHz FIXED BROADCASTING MOBILE except aeronautical mobile 5.316B 5.317A 5.312 5.314 5.315 5.316A 5.319	FIXED BROADCASTING MOBILE except aeronautical mobile 5.316B 5.316A 5.316B NF17	Fixed links 856 - 864.1 MHz Television Broadcasting 470 - 854 MHz	The fixed links will be migrated along with the broadcasting service after the dual illumination period. Broadcasting Allotments in accordance with GE 89 plan in the process of conversion to GE 06 IMT 790 - 862 MHz

852 – 890 MHz

ITU Region 1 Allocation	South African	Typical Applications	Notes and
862-890 MHz			
FIXED	FIXED	Fixed Links 868.1 - 876 MHz	
MOBILE except Aeronautical mobile 5.317A	MOBILE except Aeronautical mobile 5.317A NF 18, NF 19, NF 20	Wireless Audio systems 863 – 865 MHz 865 - 868 MHz RFID; Non Specific SRD and RFID 869.4 – 869.65 MHz Alarms 868.6 – 868.7 MHz, 869.25 – 869.3 MHz, 869.65 – 869.7 MHz Mobile Wireless Access 824 - 849 MHz Mobile MTX 880 - 890 MHz	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer Paired with 869 - 894 MHz Paired with 925 -935 MHz
BROADCASTING 5.322 5.319			

5.323

PART D: 890 MHz - 3000 GHz

890 – 1 215 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
890 – 942 FIXED MOBILE Aeronautical Mobile 5.317A	MOBILE except Aeronautical Mobile 5.317A NF 18, NF 19, NF 20, NF 21	Mobile MTX 890 - 915 MHz 915.1 - 915.2 MHz Real Time Location System 915.2 - 915.4 MHz Passive Tags 195.4 - 919 MHz Modulating RFID Systems (FHSS) 919. - 919.2 MHz Tag Backscatter Guard Band	Paired with 925 - 935 MHz Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer Government Gazette No 31127, Notice No 713 Of 2008 refers.

BROADCASTING 5.322 Radiolocation 5.323		919.2 - 921. MHz Non Modulating Backscatter RFID Systems	
942 – 960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	MOBILE except aeronautical mobile 5.317A NF 18, NF 19, NF 20	Mobile BTX 935 – 960 MHz	Paired with 890 - 915 MHz
960 - 1 164			

AERONAUTICAL RADIONAVIGATION 5.328	AERONAUTICAL RADIONAVIGATION 5.328	Distance Measuring Equipment / Secondary Surveillance Radar	
AERONAUTICAL MOBILE (R) 5.327A	AERONAUTICAL MOBILE (R) 5.327A		
1 164 - 1 215			
AERONAUTICAL RADIONAVIGATION 5.328	AERONAUTICAL RADIONAVIGATION 5.328		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)		
5.328A 5.328B	5.328A 5.328B		

1 215 – 1 429 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1 215 - 1 240			
EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE		
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B 5.331	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B 5.331	Global Positioning System 1215 – 1260 MHz	
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
5.330 5.331 5.332	5.332		
1 240 - 1 300			

EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION	Air Traffic Control Radar 1240 - 1350 MHz	
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	Global Positioning Systems L2 1215 -1260 MHz	
5.328B 5.329 5.329A 5.331	5.328B 5.329 5.329A 5.331		
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
Amateur	Amateur	Amateur 1240 - 1300 MHz	
5.330 5.331 5.332 5.335.335A	5.332 5.335A		
1300 – 1350			

AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
5.337	5.337		
RADIOLOCATION	RADIOLOCATION	Air Traffic Control Radar 1240 - 1350 MHz	
RADIONAVIGATION SATELLITE (Earth-to-space)	RADIONAVIGATION SATELLITE (Earth-to-space)		
	Radio Astronomy 5.149		
5.149 5.337A	5.337A		
1 350 - 1 400			
FIXED	FIXED	Fixed low capacity PTP links 1350 - 1375 MHz	Paired with 1492 - 1517 MHz. CEPT T/R 13-01 Annex A refers
		Fixed low capacity PTP links 1375 - 1400 MHz	Paired with 1427 - 1452 MHz. CEPT T/R 13-01 Annex B refers.
MOBILE			

RADIOLOCATION	RADIOLOCATION		
	Radio astronomy 5.149		
5.149 5.338 5.339 5.338A	5.339 5.338A		
1 400 - 1 427			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	
5.340 5.341	5.340 5.341		
1 427- 1 429			
FIXED	FIXED	Fixed low capacity PTP links 1427 – 1452 MHz	Paired with 1375 - 1400 MHz. CEPT T/R 13-01 Annex B refers.
SPACE OPERATION (Earth-to- space)			

MOBILE except aeronautical mobile			
5.341 5.338A			

1300 - 1525 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1 429-1 452 FIXED MOBILE except aeronautical mobile 5.341 5.342 5.338A	FIXED	Fixed links 1427 – 1452 MHz	Paired with 1375 - 1400 MHz. CEPT T/R 13-01 Annex B refers.
1 452-1 492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345	BROADCASTING	Terrestrial Digital Audio Broadcasting (T-DAB) 1452 - 1479.5 MHz	

BROADCASTING-SATELLITE	BROADCASTING-SATELLITE	Satellite Digital Audio Broadcasting (S-DAB) 1479.5 - 1492 MHz	
5.345 5.347A	NF22		
5.341 5.342	5.345		
1 492-1 518			
FIXED	FIXED	Fixed Links 1492 – 1517 MHz	Paired with 1350 - 1375 MHz. CEPT T/R 13-01 Annex A refers.
		Single Frequency Fixed Links 1517 – 1525 MHz	CEPT T/R 13-01 refers
MOBILE except aeronautical mobile			
5.341 5.342			
1 518-1 525			

FIXED	FIXED	Single Frequency Fixed Links 1517 – 1525 MHz	CEPT T/R 13-01 refers
MOBILE except aeronautical mobile			
MOBILE-SATELLITE (space-to-Earth)	MOBILE SATELLITE (space-to-Earth) 5.348 5.348A 5.351A		IMT satellite component 1518 – 1525 MHz
5.348 5.348A 5.348B			
5.351A 5.341 5.342			

1 525 – 1 610 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1525-1530			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
FIXED	FIXED		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)	MARITIME SATELLITE 1525 – 1544 MHz	GMDSS Paired with 1626.5 – 1660.5 MHz
		MOBILE SATELLITE 1544 – 1545 MHz	GMDSS Paired with 1645.5 – 1646.5 MHz
		AERONAUTICAL MOBILE SATELLITE 1545 – 1555 MHz	GMDSS Paired with 1646.5 – 1656.5 MHz
		LAND MOBILE SATELLITE 1555 – 1559 MHz	GMDSS Paired with 1656.5 – 1660.5 MHz
5.208B 5.351A	5.208B 5.348 5.351A		
Earth exploration-satellite	Earth exploration-satellite		

Mobile except aeronautical mobile	Mobile except aeronautical mobile		
5.349			
5.341 5.342 5.351	5.351 5.354		
5.352A 5.354			
1 530-1535			
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)	MARITIME SATELLITE 1525 – 1544 MHz	GMDSS Paired with 1626.5 – 1660.5 MHz
		MOBILE SATELLITE 1544 – 1545 MHz	GMDSS Paired with 1645.5 – 1646.5 MHz
		AERONAUTICAL MOBILE SATELLITE 1545 – 1555 MHz	GMDSS Paired with 1646.5 – 1656.5 MHz
		LAND MOBILE SATELLITE 1555 – 1559 MHz	GMDSS Paired with 1656.5 – 1660.5 MHz

5.347A 5.351A 5.353A	5.208B 5.348 5.351A 5.353A		
Earth exploration-satellite	Earth exploration-satellite		
Fixed	Fixed		
Mobile except aeronautical mobile	Mobile except aeronautical mobile		
5.341 5.342 5.351 5.354	5.351 5.354		
1535-1559			
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)	MARITIME SATELLITE 1525 – 1544 MHz	GMDSS Paired with 1626.5 – 1660.5 MHz
		MOBILE SATELLITE 1544 – 1545 MHz	GMDSS Paired with 1645.5 – 1646.5 MHz
		AERONAUTICAL MOBILE SATELLITE 1545 – 1555 MHz	GMDSS Paired with 1646.5 – 1656.5 MHz
		LAND MOBILE SATELLITE 1555 – 1559 MHz	GMDSS Paired with 1656.5 – 1660.5 MHz
5.208B 5.351A	5.208B 5.348 5.351A		

5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359	5.351 5.353A 5.354 5.356 5.357 5.357A		
1559-1610 AERONAUTICAL- RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A 5.208B 5.341 5.362B 5.362C	AERONAUTICAL- RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A 5.208B	AERONAUTICAL (R) 1545-1555 MHz Global Positioning System 1559 - 1610 MHz	Paired with 1646.5-1656.5 MHz

1610 - 1660 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL-RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.364 5.365 5.368 5.371 5.372 	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems.
1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.364 5.365 5.368 5.372 RADIO ASTRONOMY 5.149	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems

AERONAUTICAL- RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372			
1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL- RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.347A 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.364 5.365 5.368 5.372	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems

1626.5-1660			
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MARITIME SATELLITE 1626.5-1645.5 MHz	GMDSS Paired with 1525 – 1544 MHz
5.351A	5.351A 5.364 5.365 5.368 5.372	MOBILE SATELLITE 1645.5-1646.5 MHz	GMDSS Paired with 1544 – 1545 MHz
		AERONAUTICAL MOBILE SATELLITE (R) 1646.5-1656.5 MHz	GMDSS Paired with 1545 - 1555 MHz
		LAND MOBILE SATELLITE 1656.5-1660.5 MHz	GMDSS Paired with 1555 1559 MHz
5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.374 5.375 5.376	5.351 5.353A 5.354 5.357A 5.375		

1660 - 1710 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1660 - 1660.5			
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MARITIME SATELLITE 1626.5-1645.5 MHz	GMDSS Paired with 1525 – 1544 MHz
5.351A	5.351A 5.364 5.365 5.368 5.372	MOBILE SATELLITE 1645.5-1646.5 MHz	GMDSS Paired with 1544 – 1545 MHz
		AERONAUTICAL MOBILE SATELLITE (R) 1646.5-1656.5 MHz	GMDSS Paired with 1545 - 1555 MHz
		LAND MOBILE SATELLITE 1656.5-1660.5 MHz	GMDSS Paired with 1555 1559 MHz
	5.351A 5.364 5.365 5.368 5.372		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149 5.341 5.351 5.354 5.376A	5.149 5.354 5.376A		
1 660.5 - 1 668			

RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
Fixed			
Mobile except aeronautical mobile			
5.149 5.341 5.379 5.379A	5.149 5.341 5.379A		
1 668 - 1 668.4			
MOBILE-SATELLITE (Earth-to-space)	MOBILE SATELLITE (Earth-to-space) 5.348 5.348A 5.351A		IMT satellite component 1668 – 1675 MHz
5.351A 5.379B 5.379C	5.351A 5.379B 5.379C		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
Fixed			
Mobile except aeronautical mobile			
5.149 5.341 5.379 5.379A 5.379D	5.149 5.341 5.379A 5.379D		

1 668.4 - 1 670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D	METEOROLOGICAL AIDS MOBILE SATELLITE (Earth --to-space) 5.348 5.348A 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D		IMT satellite component 1668 – 1675 MHz
1670 – 1675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL AIDS	Radiosondes 1668 -1700 MHz	

MOBILE	MOBILE		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space) 5.348 5.348A 5.351A		IMT satellite component
5.351A 5.379B 5.341 5.379D 5.379E 5.380A	5.379B 5.379C 5.379D		1668 – 1675 MHz
1675 – 1690			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radiosondes 1668 -1700 MHz	
FIXED			
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.341	5.341		
1690 – 1700			
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Radiosondes	Channels
		1668-1700MHz	1695.6938; 1695.7250;

METEOROLOGICAL- SATELLITE (space-to-Earth) Fixed Mobile except Aeronautical mobile 5.289 5.341 5.382	METEOROLOGICAL- SATELLITE (space-to-Earth) 5.289 5.341	1695.7562; 1695.7874; 1691; 1694.5MHz
1700 – 1710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except Aeronautical mobile 5.289 5.341	METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341	

1710 - 2170 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
1710 – 1930			
FIXED	FIXED	DECT 1880 - 1900 MHz Cordless DECT phones Wireless Access Systems 1900 - 1920 MHz Extended DECT 1785 – 1805 MHz Fixed Broadband data applications	The band 1880 – 1900 MHz is also used for DECT cordless telephones (Government Gazette No 26193, Notice 533 of 24 March 2004 refers.)
MOBILE	NF 23, NF 24, NF 25, NF 26 MOBILE	Mobile 1800 MTX 1710 – 1785 MHz	Paired with BTX 1805 – 1880 MHz. CEPT T/R 22-07 refers

5.149 5.341 5.384A 5.385 5.386 5.388 5.388A 5.388B	5.384A 5.385 5.388 5.388A		
1930 – 1970			
FIXED	FIXED		
MOBILE	MOBILE		Terrestrial component of IMT
5.388 5.388A 5.388B	5.388 5.388A	1920 – 1980 MHz	Paired with 2110 – 2170 MHz
	NF26		
1970 – 1980			
FIXED	FIXED		
MOBILE	MOBILE		Terrestrial component of IMT
5.388 5.338A 5.388B	5.388 5.338A	1920 – 1980 MHz	Paired with 2110 – 2170 MHz.
	NF26		
1980 – 2010			

FIXED	FIXED	Fixed links 1980 - 2010 MHz	Paired with 2170 - 2200 MHz
MOBILE			
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A		Satellite component of IMT
	NF26		
5.388 5.389A 5.389F	5.388 5.389A		
2010 – 2025			
FIXED	FIXED		
MOBILE	MOBILE		Terrestrial component of IMT
5.388 5.388A 5.388B	5.388 5.388A		
2025 – 2110			
FIXED	FIXED NF27	Fixed Links 2025 - 2110 MHz	Paired with 2200 - 2285 MHz. ITU-R F.1098 and CEPT T/R 13-01 Annex C refers

SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) (Earth-to-space) MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392			
2110 – 2120 FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	FIXED MOBILE 5.388A 5.388	2110 – 2170 MHz	Terrestrial component of IMT

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)

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

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

5.386 *Additional allocation:* the band 1 750-1 850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. 9.21, having particular regard to troposcatter systems. (WRC-03)

5.388 The bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution 212 (Rev.WRC-97)*. (See also Resolution 223 (WRC-2000)*.) (WRC-2000)

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

5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT-2000 base station in neighbouring countries, in the bands referred to in No. 5.388A, shall not exceed a co-channel power flux-density of $-127 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-03)

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

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

5.389F 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)

5.390 (SUP - WRC-07)

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

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

5.395 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

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

2120 – 2160			
FIXED	FIXED		
MOBILE 5.388A 5.388B	MOBILE 5.388A	2110 – 2170 MHz	Terrestrial component of IMT
5.388	5.388		
2160 – 2170			
FIXED	FIXED NF1		
MOBILE 5.388A 5.388B	MOBILE 5.388A 5.388B	2110 – 2170 MHz	Terrestrial component of IMT
5.388	5.388		

2170 - 2520 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
2170 – 2200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A NF27 5.388 5.389A	Fixed links 2170 - 2200 MHz Satellite component of IMT	Paired with 1980 – 2010 MHz Band also to be used for GMPCS systems
2200 – 2290 FIXED	FIXED N27	Fixed links 2200 – 2285 MHz WAS 2285 – 2290 MHz	Paired with 2025 - 2110, ITU-R F.1098 and CEPT T/R 13-01 Annex C refer

SPACE OPERATION (space-to-Earth) (space-to-space) EARTH SATELLITE EXPLORATION- (space-to-space) (space-to-Earth) MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space)	TT&C, receive from space	
2290 – 2300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	FIXED	Fixed links	
2300 – 2450			IMT 2300 – 2400 MHz

FIXED	FIXED	Fixed links	(PtP & PtMP)
		2307 - 2387 MHz	Paired with 2401 – 2481 MHz
		Outside Broadcasting links	28 MHz channelling OB links. Frequency co-ordination with fixed links on a case-by-case basis is mandatory for all OB links. Primary basis: 2377 MHz and 2471 MHz. Secondary basis: 2321 MHz, 2349 MHz, 2415 MHz and 2443 MHz
		WLAN & RFID 2400 – 2483.5 MHz.	Government Gazette No 31127, Notice No 713 Of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer
		Non-specific SRD's and low power video surveillance 2400 – 2483.5 MHz	
		ISM 2400 – 2500 MHz	International ISM band for Industrial, scientific and medical equipment (5.150 refers).
			All fixed services in the band 2300

MOBILE	MOBILE 5.384A NF28		MHz – 2400 MHz are earmarked for future migration
Amateur	Amateur		
Radiolocation			
5.150 5.282 5.384A 5.395	5.150		
2450 – 2483.5			
FIXED	FIXED	Fixed links on 2401 – 2481 MHz	(PTMP and PTP) Paired with 2307 - 2387 MHz
		Outside Broadcasting links	28 MHz channelling OB links. Frequency co-ordination with fixed links on a case-by-case basis is mandatory for all OB links. Primary basis: 2377 MHz and 2471 MHz. Secondary basis: 2321 MHz, 2349 MHz, 2415 MHz and 2443 MHz

MOBILE	MOBILE	WLAN & RFID 2400 – 2483.5 MHz	Government Gazette No 31127, Notice No 713 of 2008 and Government Gazette No 31290, Notice No 926 of 2008 refer
Radiolocation	NF29	ISM 2400 – 2500 MHz	
5.150 5.397	5.150 5.384A		
2483.5 – 2500			
FIXED	FIXED	ISM 2400 – 2500 MHz	
MOBILE	MOBILE	Aeronautical surveillance Mobile Video	Unmanned Aerial Vehicles only.
MOBILE-SATELLITE (space-to Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A		Some systems are paired with 1610 - 1626.5 MHz).

Radiolocation 5.150 5.371 5.397 5.398 5.399 5.400 5.402	NF 29 5.150 5.402		
2500 – 2520 FIXED 5.410 MOBILE except Aeronautical mobile 5.384A 5.405	FIXED MOBILE except aeronautical mobile 5.384A		IMT 2500 – 2690 MHz

2520 - 2700 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
2520 – 2655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.405 5.412 5.417C 5.417D 5.418B 5.418C	FIXED 5.410 MOBILE except aeronautical mobile 5.384A		IMT 2500 – 2690 MHz

2655 – 2670			IMT 2500 – 2690 MHz
FIXED 5.410	FIXED 5.410		
MOBILE except Aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A		
BROADCASTING-SATELLITE			
5.413 5.416			
Earth exploration-satellite (passive)			
Radio astronomy	Radio astronomy		
Space research (passive)			
5.149 5.420	5.149		
2670 – 2690			IMT 2500 – 2690 MHz

FIXED 5.410	FIXED 5.410		
MOBILE except Aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A		
Earth exploration-satellite (passive)			
Radio astronomy	Radio astronomy		
Space research (passive)			
5.149 5.419 5.420	5.149		
2690 – 2700			
EARTH EXPLORATION- SATELLITE (passive)			
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	

5.340 5.422	5.340		
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2700 - 4800 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
2700 – 2900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423		
2900 – 3100 RADIONAVIGATION 5.426 RADIOLOCATION 5.424A 5.425 5.427	RADIONAVIGATION 5.426 RADIOLOCATION 5.424A 5.425 5.427		

3100 – 3300			
RADIOLOCATION	RADIOLOCATION	Government Services	
Earth exploration-satellite (active)	Earth exploration-satellite (active)		
Space research (active)	Space research (active)		
5.149 5.428	5.149		
3300– 3400			
RADIOLOCATION	RADIOLOCATION	Government Services	
5.149 5.429 5.430			
3400 – 3600			IMT 3400 – 3600 MHz
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)			

Mobile 5.430A	MOBILE except Aeronautical Mobile 5.430A		
Radiolocation			
5.431			
3600 – 4200			
FIXED	FIXED	Fixed links	PtP links sharing with FSS
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	VSAT/SNG/Satellite PTP links	Known as C-band - Sharing with FS
Mobile	NF 32 NF35		
4200 – 4400			
AERONAUTICAL-RADIONAVIGATION 5.438	AERONAUTICAL RADIONAVIGATION 5.438		
5.440			

4400 – 4500			
FIXED	FIXED NF33	Outside Broadcasting (OB) / Electronic News Gathering (ENG)	
		Government Services	
MOBILE 5.440A			
4500 – 4800			
FIXED	FIXED NF33	Outside Broadcasting (OB) / Electronic News Gathering (ENG)	
		Government Services	
FIXED-SATELLITE (space-to-Earth) 5.441			
MOBILE 5.440A			

4800 - 5570 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
4800 – 4990 FIXED MOBILE 5.442 5.4B01 Radio Astronomy 5.149 5.339	FIXED NF33 Radio Astronomy 5.149	Outside Broadcasting (OB) / Electronic News Gathering (ENG) Government Services Radio Astronomy on 4825 – 4835 & 4950 – 4990 MHz	
4990 – 5000 FIXED	FIXED NF33	Outside Broadcasting (OB) / Electronic News Gathering (ENG) Government Services	

MOBILE except aeronautical mobile			
RADIO ASTRONOMY	RADIO ASTRONOMY		
Space Research (passive)			
5.149	5.149		
5000 – 5010			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
RADIONAVIGATION-SATELLITE (Earth-to-space)	RADIONAVIGATION-SATELLITE (Earth-to-space)		
5.367	5.367		
5010 – 5030			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		

RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B 5.328B 55.367	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B 5.328B 5.367		
5030 – 5091 AERONAUTICAL RADIONAVIGATION 5.367 5.444	AERONAUTICAL RADIONAVIGATION 5.367 5.444	MICROWAVE SYSTEMS LANDING	
5091 – 5150 AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE 5.367 5.444 5.444A	AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE 5.444	NGSO MSS feeder links (5091 - 5150 MHz)	
5150 – 5250			

AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE SERVICE (Earth-to-space) 5.447A MOBILE except Aeronautical mobile 5.446A 5.446B 5.446 5.447 5.447B 5.447C 5.4B04	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE SERVICE (Earth-to-space) 5.447A NF35 MOBILE except Aeronautical mobile 5.446A 5.446B 5.447B 5.447C	NGSO MSS feeder links 5091 – 5150 MHz WAS / RLAN (indoor use only)	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers.
5250 – 5255 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except Aeronautical mobile 5.446A 5.447F	SPACE RESEARCH 5.447D MOBILE except Aeronautical mobile 5.446A	WAS / RLAN	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers.

5.448A			
5255 – 5350			
EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
MOBILE except Aeronautical mobile 5.446A 5.447F 5.448A	MOBILE except Aeronautical mobile 5.446A	WAS / RLAN	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers,
5350 – 5460			
EARTH EXPLORATION- SATELLITE (active) 5.448B	EARTH EXPLORATION- SATELLITE (active) 5.448B		

AERONAUTICAL- RADIONAVIGATION 5.449	AERONAUTICAL- RADIONAVIGATION 5.449		
RADIOLOCATION 5.448D	RADIOLOCATION 5.448D		
SPACE RESEARCH (active) 5.448C	SPACE RESEARCH (active) 5.448C		
5460 – 5470			
RADIONAVIGATION 5.449	RADIONAVIGATION 5.449		
EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)		
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
RADIOLOCATION 5.448D	RADIOLOCATION 5.448D		
5.448B	5.448B		

5470 – 5570			
MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION	Maritime Radionavigation and Location (Radar)	
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A	WAS / RLAN	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers,
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)		
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
RADIOLOCATION 5.450B	RADIOLOCATION 5.450B		
5.450 5.451 5.452 5.448B	5.452 5.448B		

5570 - 7250 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
5570 – 5650			
MARITIME- RADIONAVIGATION	MARITIME- RADIONAVIGATION	Maritime Radionavigation and Location (Radar)	
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A	WAS / RLAN	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers,
RADIOLOCATION 5.450B	RADIOLOCATION 5.450B	Ground-based meteorological radars 5600 – 5650 MHz	
5.450 5.451 5.452	5.452		
5650 – 5725			
RADIOLOCATION	RADIOLOCATION		

MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A	WAS / RLAN	Government Gazette No. 31321 Notice No. 944 of 8 August 2008 refers,
Amateur	Amateur		
Space Research (deep space)	Space Research (deep space)		
5.282 5.451 5.453 5.454 5.455	5.282 5.455		
5725 – 5830			
FIXED-SATELLITE (Earth-to- space)	FIXED-SATELLITE (Earth-to- space)		
	NF35		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
	NF34		
5.150 5.451 5.453 5.455 5.456	5.150		

		ISM (5725 - 5875 MHz)	Government Gazette No 31290, Notice No 926 of 2008 refers
5830 – 5850			
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
	NF35		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite (space-to-Earth) 5.150 5.451	Amateur-satellite (space-to-Earth) 5.150 5.451 NF34		
5.453 5.455 5.456		ISM (5725 - 5875 MHz)	Government Gazette No 31290, Notice No 926 of 2008 refers

5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	FIXED FIXED-SATELLITE (Earth-to-space) NF35, NF36 Mobile 5.150 NF 34	VSAT/SNG/Satellite PTP links ISM (5725 - 5875 MHz)	Government Gazette No 31290, Notice No 926 of 2008 refers
5925 – 6700 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B	FIXED N37 FIXED-SATELLITE (Earth-to-space) 5.457A	Fixed links VSAT/SNG/FSS feeder links	

MOBILE	NF35		
5.149 5.440 5.458	5.149 5.440 5.458		
6700 – 7075			
FIXED	FIXED NF1	Fixed links	
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 NF35 NF38	S-DAB feeder links (uplinks)	
MOBILE			
5.458 5.458A 5.458B 5.458C	5.458 5.458A		
7075 – 7145			
FIXED	FIXED NF38 NF39	Fixed links	
MOBILE			
5.458			

7145 – 7235			
FIXED	FIXED NF39	Fixed links	
MOBILE			
SPACE RESEARCH (Earth-to-space) 5.460	SPACE RESEARCH (Earth-to-space) 5.460		
5.458 5.459			
7235 – 7250			
FIXED	FIXED NF39	Fixed links	
MOBILE			
5.458			

7250 - 8500 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
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7 250-7 300 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	FIXED NF39 NF35	Fixed links	
7300-7450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	FIXED NF39, NF40 NF35	Fixed links	

5.461			
7450 – 7550			
FIXED	FIXED	Fixed links	
	NF40		
FIXED-SATELLITE (space-to-Earth)			
METEOROLOGICAL- SATELLITE (space-to-Earth) 5.461A	METEOROLOGICAL- SATELLITE (space-to-Earth) 5.461A		On a co-ordinated basis with FS
MOBILE except aeronautical mobile			
7550 – 7750			
FIXED	FIXED NF40	Fixed links	
FIXED-SATELLITE (space-to-Earth)			

MOBILE except aeronautical mobile			
7750 – 7850			
FIXED	FIXED NF41	Fixed links	
METEOROLOGICAL- SATELLITE (space-to-Earth) 5.461B	METEOROLOGICAL- SATELLITE (space-to-Earth) 5.461B		On a co-ordinated basis with FS
MOBILE except aeronautical mobile			
7850 – 7900			
FIXED	FIXED NF41	Fixed links	
MOBILE except aeronautical mobile			
7900 – 8025			
FIXED	FIXED NF41	Fixed links	

FIXED-SATELLITE (Earth-to-space) MOBILE 5.461			
8025 – 8175 EARTH SATELLITE 5.462A EXPLORATION- (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463	EARTH SATELLITE 5.462A EXPLORATION- (space-to-Earth) FIXED NF41	Fixed links	
8175 – 8215 EARTH SATELLITE 5.462A EXPLORATION- (space-to-Earth)	EARTH SATELLITE 5.462A EXPLORATION- (space-to-Earth)		

FIXED		FIXED NF41	Fixed links	
FIXED-SATELLITE (Earth-to-space)				
METEOROLOGICAL- SATELLITE (Earth-to-space)		METEOROLOGICAL- SATELLITE (Earth-to-space)		On a co-ordinated basis with FS
MOBILE 5.463				
8215 – 8400				
EARTH SATELLITE 5.462A	EXPLORATION- (space-to-Earth)	EARTH SATELLITE 5.462A	EXPLORATION- (space-to-Earth)	
FIXED		FIXED NF41 NF42	Fixed links	
FIXED-SATELLITE (Earth-to-space)				
MOBILE 5.463				
8400 – 8500				

FIXED	FIXED	Fixed links	
MOBILE except aeronautical mobile			
SPACE RESEARCH (space-to-Earth) 5.465	SPACE RESEARCH (space-to-Earth) 5.465		

8500 - 10 000 MHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
8500 – 8550 RADIOLOCATION 5.468 5.469	RADIOLOCATION		
8550 – 8650 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A		
8650 – 8750 RADIOLOCATION	RADIOLOCATION		

5.468 5.469			
8750 – 8850			
RADIOLOCATION	RADIOLOCATION		
AERONAUTICAL RADIONAVIGATION 5.470	AERONAUTICAL RADIONAVIGATION 5.470		
5.471			
8850 – 9000			
RADIOLOCATION	RADIOLOCATION		
MARITIME RADIONAVIGATION 5.472	MARITIME RADIONAVIGATION 5.472		
5.473			
9000 – 9200			
AERONAUTICAL- RADIONAVIGATION 5.337	AERONAUTICAL- RADIONAVIGATION 5.337	Approach Radar	

RADIOLOCATION 5.471 5.473A	RADIOLOCATION 5.473A		
9200 – 9300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474	 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474	Harbour Radar	
9300 – 9500 RADIONAVIGATION EARTH EXPLORATION- SATELLITE (Active) SPACE RESEARCH (Active)	 RADIONAVIGATION EARTH EXPLORATION- SATELLITE (Active) SPACE RESEARCH (Active)	Shore based radars 9380 – 9440 MHz	

RADIOLOCATION	RADIOLOCATION	Field Disturbance and Doppler Apparatus 9200 – 9975 MHz	Movement Detection Radars. Government Gazette No. 31290, Notice No. 926 of 2008 refers
5.427 5.474 5.475 5.475B 5.476A 5.475A	5.427 5.474 5.475 5.475B 5.476A 5.475A		
9500 – 9800			
EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION	Field Disturbance and Doppler Apparatus 9200 – 9975 MHz	Movement Detection Radars Government Gazette No 31290, Notice No 926 of 2008 refers
RADIONAVIGATION	RADIONAVIGATION		
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
5.476A	5.476A		

9800 – 9900			
RADIOLOCATION	RADIOLOCATION	Field Disturbance and Doppler Apparatus 9200 – 9975 MHz	MOVEMENT DETECTION (Low Power) Government Gazette No 31290, Notice No 926 of 2008 refers
Earth exploration-satellite (Active)	Earth exploration-satellite (Active)		
Space research (Active)	Space research (Active)		
Fixed			
5.477 5.478A 5.478B	5.478A 5.478B		
9900 – 10000			
RADIOLOCATION	RADIOLOCATION		
Fixed	Fixed		
5.477			

10.0 – 11.7 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
10.00 – 10.45			
FIXED	FIXED	Low Power Video links 10.0 – 10.15 GHz	
		Fixed links 10.15 – 10.3 GHz	Paired with 10.5 – 10.65 GHz
MOBILE			
RADIOLOCATION	RADIOLOCATION		Motion Sensors
Amateur			
10.45 – 10.50			
RADIOLOCATION	RADIOLOCATION	Motion Sensors	
Amateur			

Amateur-Satellite			
5.481			
10.50 – 10.55			
FIXED	FIXED	Fixed links 10.5 – 10.65 GHz	Paired with 10.15 – 10.3 GHz
MOBILE			
Radiolocation	Radiolocation	Motion Sensors	
10.55 – 10.60			
FIXED	FIXED	Fixed links 10.5 – 10.65 GHz	Paired with 10.15 – 10.3 GHz
MOBILE except aeronautical mobile			
Radiolocation	Radiolocation	Motion Sensors	
10.60 – 10.68			

EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
FIXED	FIXED	Fixed links 10.5 – 10.65 GHz	Paired with 10.15 – 10.3 GHz
MOBILE except aeronautical mobile			
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
Radiolocation	Radiolocation	Motion Sensors	
5.149 5.482 5.482A	5.149 5.482A		
10.68 – 10.7			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		

5.340 5.483	5.340		
10.7 – 11.7			
FIXED	FIXED NF 43	Fixed links	Sharing with BSS
FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484	FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484	VSAT/SNG/BSS feeder links (primary) [DTH (primary)]	Pending Consultation
	NF45		
MOBILE except aeronautical mobile			

11.70 - 14 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
11.70 – 12.50			
FIXED	FIXED	Electronic News Gathering / Outside Broadcasting	
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE	BSS feeder links	
	NF45		
MOBILE except aeronautical mobile			
5.487 5.492	5.487 5.492		
12.5 – 12.75			

FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.484A 5.494 5.495	FIXED SATELLITE (space-to-Earth) 5.484A NF45	VSAT/SNG/DTH	
12.75 – 13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space Research (deep space) (space-to-Earth)	FIXED NF44	Fixed links	
13.25 – 13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL-RADIONAVIGATION 5.497	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL-RADIONAVIGATION 5.497		

SPACE RESEARCH (active) 5.498A	SPACE RESEARCH (active) 5.498A		
13.40 – 13.75 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal satellite (Earth-to-space) 5.500 5.501B	RADIOLOCATION	FDDA 13.4 – 14 GHz	Government Gazette No 31290, Notice No 926 of 2008 refers
13.75 – 14. FIXED-SATELLITE (Earth-to- space) 5.484A	FIXED SATELLITE (Earth-to- space) 5.484A NF45	VSAT/SNG/FSS feeder links	

RADIOLOCATION	RADIOLOCATION	FDDA 13.4 - 14 GHz,	Government Gazette No 31290, Notice No 926 of 2008 refers
Standard frequency and time signal satellite (Earth-to-space)	Standard frequency and time signal satellite (Earth-to-space)		
Space research	Space research		
Earth exploration –satellite	Earth exploration –satellite		
5.500 5.502 5.503	5.502 5.503		

14.00 – 15.40 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
14.00 – 14.25 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space Research 5.505 5.504A	FIXED SATELLITE (Earth-to-space) 5.484A 5.506 5.457A NF45 Mobile-satellite (Earth-to-space) 5.504B	VSAT/SNG/FSS feeder links	
14.25 – 14.30			

FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.506A 5.509A Space Research 5.505 5.508 5.509 5.504A	FIXED SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) 5.504B NF45 Mobile-satellite (Earth-to-space) 5.504B	VSAT/SNG/FSS feeder links	
14.30 – 14.40 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B MOBILE except aeronautical mobile	FIXED SATELLITE (Earth-to-space) NF45	VSAT/SNG/FSS feeder links	

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Mobile-satellite (Earth-to-space) 5.506A 5.509A			
Space Research (space-to-Earth)			
5.504A	5.484A 5.506 5.457A		
14.47 – 14.50			
FIXED			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space) NF45	VSAT/SNG/FSS feeder links	
MOBILE except aeronautical-mobile			
Mobile-satellite (Earth-to-space) 5.506A 5.509A 5.504B			
Radio Astronomy			
5.149 5.504A	5.484A 5.506 5.457A		

14.50 – 14.80			
FIXED	FIXED	Fixedlinks	
	NF46		
FIXED-SATELLITE (Earth-to-space) 5.510	FIXED-SATELLITE (Earth-to-space) 5.510	BSS feeder links	
MOBILE			
Space Research			
14.80 – 15.35			
FIXED	FIXED	Fixed links	
MOBILE			
Space Research			
5.339			
15.35 – 15.4			

EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.340	VILBIRA OBSERVATIONS Passive Sensing	
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15.40 – 18.40 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
15.40 – 15.43 AERONAUTICAL RADIONAVIGATION 5.511C	AERONAUTICAL RADIONAVIGATION 5.511C	RADIO ALTIMETERS/RADARS	ICAO: ASDE Annex 10
15.43 – 15.63 FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	AERONAUTICAL RADIONAVIGATION 5.511C	RADIO ALTIMETERS/RADARS	ICAO: ASDE Annex 10
15.63 – 15.70 AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIO ALTIMETERS/RADARS	ICAO: ASDE Annex 10

5.511C	5.511C		
15.70 – 16.60			
RADIOLOCATION	RADIOLOCATION		ALTIMETERS / DISTANCE MEASURING EQUIPMENT
5.512 5.513			
16.60 – 17.1			
RADIOLOCATION	RADIOLOCATION		
Space Research (deep space) (Earth-to-space)	Space Research (deep space) (Earth-to-space)		
5.512 5.513			
17.10 – 17.20	RADIOLOCATION		Government Gazette No 31290, Notice No 926 of 2008 refers
RADIOLOCATION			

5.512 5.513		Wireless Access System/Radio Local Access Network (WAS & RLAN)	
17.20 – 17.30 EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)	Wireless Access System/Radio Local Access Network (WAS & RLAN)	Government Gazette No 31290, Notice No 926 of 2008 refers

RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	RADIOLOCATION SPACE RESEARCH (active) 5.513A		
17.30 – 17.70 FIXED-SATELLITE (Earth-to-space) 5.516 (space to Earth) 5.516A 5.516B Radiolocation 5.514	FIXED-SATELLITE (Earth-to-space) 5.516 (space to Earth) 5.516A 5.516B Radiolocation		
17.70 – 18.10 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 NF47	Fixed links 17.7 - 19.7 GHz BSS feeder links 17.7 – 19.7 GHz	

18.10 – 18.40			
FIXED	FIXED	Fixed links 17.7 - 19.7 GHz	
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 NF47	BSS Feeder links 17.7 – 19.7 GHz	
MOBILE			
5.519 5.521			

18.40 – 22.00 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
18.40 – 18.60			
FIXED	FIXED	Fixed links 17.7 - 19.7 GHz	
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	BSS Feeder links 17.7 – 19.7 GHz	
MOBILE	NF47		
18.60 – 18.80			
FIXED	FIXED	Fixed links 17.7 - 19.7 GHz	
FIXED-SATELLITE (space-to-Earth) 5.522B	FIXED-SATELLITE (space-to-Earth) 5.522B	BSS Feeder Links 17.7 – 19.7 GHz	
	NF47		
MOBILE except aeronautical mobile			

EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
Space research (passive)	Space research (passive)	Passive Sensing	
5.522A 5.522C	5.522A		
18.80 – 19.30			
FIXED	FIXED	Fixed links 17.7 - 19.7 GHz	
FIXED-SATELLITE (space-to- Earth) 5.523A 5.516B	FIXED-SATELLITE (space-to- Earth) 5.523A 5.516B	BSS Feeder links 17.7 – 19.7 GHz	
	NF47		
MOBILE			
19.30 – 19.70			
FIXED	FIXED	Fixed links 17.7 - 19.7 GHz	

FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E NF47	BSS Feeder links 17.7 – 19.7 GHz	
19.70 – 20.10 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B Mobile-Satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	GSO/FSS	
20.10 – 20.20 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	GSO/FSS	

5.524 5.525 5.526 5.527 5.528	5.525 5.526		
20.20 – 21.20			
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
Standard frequency and time signal- satellite (space-to-Earth)	Standard frequency and time signal- satellite (space-to-Earth)		
5.524			
21.20 – 21.40			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED	Fixed links	
	NF48		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	

MOBILE			
21.40 – 22.00			
FIXED	FIXED	Fixed links	
	NF48		
MOBILE			
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
5.530	5.530		

22.00 – 24.75 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
22.00 – 22.21 FIXED MOBILE except aeronautical mobile 5.149	FIXED NF48	Fixed links	
22.21 – 22.50 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	EARTH EXPLORATION-SATELLITE (passive) FIXED NF48 RADIO ASTRONOMY	Fixed links	

SPACE RESEARCH (passive) 5.149 5.532	SPACE RESEARCH (passive) 5.149 5.532	Passive Sensing	
22.50 – 22.55 FIXED MOBILE	FIXED NF48	Fixed links	
22.55 – 23.55 FIXED INTER-SATELLITE 5.338A MOBILE 5.149	FIXED NF48	Fixedlinks	
23.55 – 23.60 FIXED	FIXED NF48		

MOBILE			
23.60 – 24.00			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	
5.340	5.340		
24.00 – 24.05		ISM (24 - 24.25 GHz)	Government Gazette No 31290, Notice No 926 of 2008 refers
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
5.150	5.150		
24.05 – 24.25			

RADIOLOCATION	RADIOLOCATION	ISM (24 - 24.25 GHz)	Government Gazette No 31290, Notice No 926 of 2008 refers
Amateur	Amateur		
Earth exploration-satellite (active)	Earth exploration-satellite (active)		
5.150	5.150		
24.25 – 24.45			
FIXED	FIXED		
24.45 – 24.65			
FIXED	FIXED	Fixed links	PTP and PTMP systems
INTER-SATELLITE	NF49		
24.65 – 24.75			
FIXED	FIXED	Fixed links	PTP and PTMP systems

INTER-SATELLITE	NF49				
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24.75 – 29.9 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
24.75 – 25.25 FIXED	FIXED NF49	Fixed links	PTP and PTMP systems
25.25 – 25.50 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal- satellite (Earth-to-space)	FIXED NF49	Fixed links	PTP and PTMP systems
25.50 – 27.00			

EARTH EXPLORATION – SATELLITE (space-to-Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to- Earth) 5.536A 5.536C Standard frequency and time signal- satellite (Earth-to-space)	EARTH EXPLORATION – SATELLITE (space-to-Earth) 5.536A FIXED NF49	National Operational Satellite System (NPOESS) Polar-orbiting Environmental Fixed links	PTP and PTMP systems
27.00 – 27.50 FIXED INTER-SATELLITE 5.536 MOBILE	FIXED		

27.50 – 28.50 FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B MOBILE 5.538 5.540	FIXED NF50 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B 5.538 5.540	LMDS 27.5 - 28.35 GHz FSS/BSS feeder links 28.35 - 28.6 GHz	
28.50 – 29.10 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 5.516B 5.538 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B 5.538 5.540	NGSO FSS (28.6 - 29.1 GHz) and FSS/ BSS feeder links (28.35 - 28.6 GHz)	

29.10 – 29.50 FIXED FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A 5.516B MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B 5.538 5.540	LMDS (29.1 - 29.25 GHz) FSS/BSS feeder links (29.25 - 30 GHz)	
29.50 – 29.90 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B	FSS/BSS feeder links 29.25 - 30 GHz	

29.90 – 34.20 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
29.90 – 30.00 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.542	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.538 MOBILE-SATELLITE (Earth-to-space) 5.525 5.526 5.527 5.542	FSS/BSS feeder links 29.25 - 30 GHz	
30.00 – 31.00 FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space)		

Standard frequency and time signal - satellite (space-to-Earth)			
5.542			
31.00 – 31.30			
FIXED 5.543A 5.338A	FIXED 5.338A	LPVS (31.0 - 31.056 GHz)	Government Gazette 20087 (Notice 939, 15 May 1999)
MOBILE			
Standard frequency and time signal - satellite (space-to-Earth)			
Space research 5.544			
5.149			
31.30 – 31.50			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		

RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)			
5.340	5.340		
31.50 – 31.80			
EARTH EXPLORATION- SATELLITE (passive)			
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)		Passive Sensing	
Fixed	FIXED 5.546	HPVS (31.5 - 31.8 GHz)	
Mobile except aeronautical mobile	MOBILE except Aeronautical Mobile 5.546		
5.149 5.546	5.149		
31.80 – 32.00			

FIXED 5.547A	FIXED 5.547A	HDFS 31.8 - 33.4 GHz	
RADIONAVIGATION	RADIONAVIGATION 5.548		
SPACE RESEARCH (deep space) (space-to-Earth)			
5.547 5.548	5.547		
32.00 – 32.30			
FIXED 5.547A	FIXED 5.547A	HDFS 31.8 - 33.4 GHz	
RADIONAVIGATION	RADIONAVIGATION		
SPACE RESEARCH (deep space) (space-to-Earth)	SPACE RESEARCH (deep space) (space-to-Earth)		
5.547 5.548	5.547 5.548		
32.30 - 33.00			
FIXED 5.547A	FIXED 5.547A	HDFS 31.8 - 33.4 GHz	

INTER-SATELLITE RADIONAVIGATION			
5.547 5.548	5.547		
33.00 – 33.40			
FIXED 5.547A	FIXED 5.547A	HDFS 31.8 - 33.4 GHz	
RADIONAVIGATION	RADIONAVIGATION		
5.547	5.547		
33.40 – 34.20			
RADIOLOCATION	RADIOLOCATION		
5.549			

34.20 – 40.00 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
34.20 – 34.70 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space)		
34.70 – 35.20 RADIOLOCATION Space Research 5.549 35.20 – 35.50 METEROLOGICAL AIDS	RADIOLOCATION Space Research METEROLOGICAL AIDS		

RADIOLOCATION 5.549	RADIOLOCATION		
35.50 – 36.00 METEROLOGICAL AIDS EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	METEROLOGICAL AIDS EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549A		
36.00 – 37.00 EARTH EXPLORATION- SATELLITE (passive) FIXED	EARTH EXPLORATION- SATELLITE (passive) FIXED		

MOBILE	MOBILE		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	RADIO ASTRONOMY 36.43 - 36.5 GHz Passive Sensing	
5.149 5.550A	5.149 5.550A		
37.00 – 37.50			
FIXED	FIXED NF51	Fixed links	
MOBILE			
SPACE RESEARCH (space-to-Earth)			
5.547	5.547		
37.50 – 38.00			
FIXED	FIXED NF51	Fixed links	
FIXED – SATELLITE (space-to-Earth)			

MOBILE			
SPACE RESEARCH (space-to-Earth)			
Earth exploration-satellite (space-to Earth)			
5.547	5.547		
38.00 – 39.50			
FIXED	FIXED NF51	Fixed links	
FIXED-SATELLITE (space-to-Earth)			
MOBILE			
Earth exploration-satellite (space-to Earth)			
5.547	5.547		
39.50 – 40.00			

FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth) 5.516B	FIXED-SATELLITE (space-to-Earth) 5.516B		
MOBILE			
MOBILE-SATELLITE (space-to-Earth)			
Earth exploration-satellite (space-to Earth)			
5.547	5.547		

40.00 – 47.50 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
40.00 – 40.50 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)	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)		
40.50 – 41.00			

FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
Mobile	Mobile		
5.547	5.547		
41.00 – 42.50			
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth) 5.516B	FIXED-SATELLITE (space-to-Earth) 5.516B		
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		

Mobile			
5.547 5.551H 5.551I	5.547 5.551H 5.551I		
42.50 – 43.50			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149 5.547	5.149 5.547		
43.50 – 47.00			
MOBILE 5.553	MOBILE 5.553		
MOBILE-SATELLITE	MOBILE-SATELLITE		

RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.554	5.554		
47.00 – 47.20			
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
47.20 – 47.50			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE	MOBILE		
5.552A	5.552A		

47.50 – 51.40 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
47.50 – 47.90 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE		
47.90 – 48.20 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		

48.20 – 48.54			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B	FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B		
MOBILE	MOBILE		
48.54 - 49.44			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE	MOBILE		
5.149 5.340	5.149 5.340		
49.44 - 50.20			
FIXED	FIXED		

FIXED-SATELLITE (Earth-to-space) 5.552 5.338A (space-to-Earth) 5.516B 5.554A 5.555B	FIXED-SATELLITE (Earth-to-space) 5.552 5.338A (space-to-Earth) 5.516B 5.554A 5.555B		
MOBILE	MOBILE		
50.20 – 50.40			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	
5.340	5.340		
50.40 – 51.40			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.338A	FIXED-SATELLITE (Earth-to-space) 5.338A		
MOBILE	MOBILE		
Mobile-Satellite (Earth-to-space)	Mobile-Satellite (Earth-to-space)		

51.40 – 58.20 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
51.4 – 52.60 FIXED 5.338A MOBILE 5.547 5.556	FIXED 5.338A MOBILE 5.547		
52.60 – 54.25 EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.340	Passive Sensing at 53.6 - 59.3 GHz	
54.25 – 55.78			

EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
INTER-SATELLITE 5.556A			
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
55.78 – 56.90			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
FIXED 5.557A	FIXED 5.557A		
INTER-SATELLITE 5.556A			
MOBILE 5.558	MOBILE 5.558		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547	5.547		
56.90 – 57.00			

EARTH EXPLORATION- SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE 5.558 SPACE RESEARCH (passive) 5.547		
57.00 – 58.20 EARTH EXPLORATION- SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE 5.558		

SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547	5.547		
58.20 – 59.00			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
FIXED	FIXED		
MOBILE	MOBILE		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.556	5.547		
59.00 – 59.30			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
FIXED	FIXED		

INTER-SATELLITE 5.556A			
MOBILE 5.558	MOBILE 5.558		
RADIOLOCATION 5.559	RADIOLOCATION 5.559		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
59.30 – 64.00			
FIXED	FIXED		
INTER-SATELLITE			
MOBILE 5.558	MOBILE 5.558		
RADIOLOCATION	RADIOLOCATION		
5.559 5.138	5.559 5.138		
64.00 – 65.00			
FIXED	FIXED		

INTER-SATELLITE			
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.547 5.556	5.547		
65.00 – 66.00			
EARTH SATELLITE EXPLORATION-	EARTH SATELLITE EXPLORATION-		
FIXED	FIXED		
INTER-SATELLITE			
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
SPACE RESEARCH	SPACE RESEARCH		
5.547	5.547		

66.00 – 81.00 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
66.00 – 71.00 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
71.00 – 74.00 FIXED FIXED-SATELLITE (space-to-Earth)	FIXED FIXED-SATELLITE (space-to-Earth)	Point to point Fixed Wireless Systems: 71 – 76 GHz	Paired with 81-86 GHz

MOBILE	MOBILE		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
	NF52		
74.00 – 76.00			
FIXED	FIXED NF52	Point to point Fixed Wireless Systems: 71 GHz – 76 GHz	Paired with 81GHz - 86 GHz
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
Space Research (space-to-Earth)	Space Research (space-to-Earth)		
5.561	5.561		

76.00 - 77.50			
FIXED	FIXED		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIO LOCATION	RADIO LOCATION	76 – 77 GHz Road Transport and Traffic Telematics	Government Gazette No. 31290 Notice No. 926 of 29 July 2008 refers
Amateur	Amateur		
Amateur Satellite	Amateur Satellite		
Space Research (space-to-Earth)	Space Research (space-to-Earth)		
5.149	5.149		
77.50 – 78.00			
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		

Radio astronomy	Radio astronomy		
Space research (space-to-Earth)	Space research (space-to-Earth)		
5.149	5.149		
78.00 – 79.00			
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite	Amateur-satellite		
Radio astronomy	Radio astronomy NF2		
Space research (space-to-Earth)	Space research (space-to-Earth)		
5.149 5.560	5.149 5.560		
79.00 – 81.00			
RADIO ASTRONOMY	RADIO ASTRONOMY		

RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite	Amateur-satellite		
Space research (space-to-Earth)	Space research (space-to-Earth)		
5.149	5.149		

81.00 – 111.8 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
81.00 – 84.00			
FIXED	FIXED NF52	Point to point Fixed Wireless Systems: 81 – 86 GHz	Paired with 71-76 GHz
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
Space Research (space-to-Earth)	Space Research (space-to-Earth)		
5.149 5.561A	5.149 5.561A		
84.00 – 86.00			

FIXED	FIXED NF52	Point to point Fixed Wireless Systems: 81 – 86 GHz	Paired with 71-76 GHz
FIXED-SATELLITE (Earth-to-space) 5.561A	FIXED-SATELLITE (Earth-to-space) 5.561A		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		
86.00 – 92.00			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Passive applications	
RADIO ASTRONOMY 5.149	RADIO ASTRONOMY 5.149		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
92.00 – 94.00			

FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
5.149	5.149		
94.00 – 94.10			
EARTH EXPLORATION- SATELLITE (active)	EARTH EXPLORATION- SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION	Short range radar. Cloud profiler radar	
SPACE RESEARCH (active)	SPACE RESEARCH (active)		
Radio astronomy	Radio astronomy		
5.562 5.562A	5.562 5.562A		

94.10 – 95.00			
FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION	Short range radar.	
5.149	5.149		
95.00 – 100.00			
FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION	RADIONAVIGATION		

RADIONAVIGATION-SATELLITE 5.149 5.554	RADIONAVIGATION-SATELLITE 5.149 5.554		
100.00 - 102.00 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	Passive Sensing	
102.00 - 105.00 FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341		

105.00 - 109.50 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		
109.50 - 111.8 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.341	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.341	Passive Sensing	

111.8 - 119.98 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
111.8 - 114.25 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		
114.25 – 116 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY		

SPACE RESEARCH (passive) 5.149 5.340 5.341	SPACE RESEARCH (passive) 5.149 5.340 5.341	Passive Sensing at 114.25 - 122.25 GHz	
116 - 119.98 EARTH EXPLORATION- SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.341	Passive sensing	

119.98 - 151.5 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
119.98 - 122.25 EARTHEXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.138 5.341	Passive sensing 114.25 – 122.25 GHz	
122.25 – 123 FIXED INTER-SATELLITE MOBILE 5.558	FIXED MOBILE 5.558		

Amateur	Amateur		
5.138	5.138		
123 – 130			
FIXED- SATELLITE (space-to-Earth)	FIXED- SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
Radio Astronomy	Radio Astronomy		
5.149 5.554	5.149 5.554		
130 – 134			
EARTH EXPLORATION-SATELLITE (active) 5.562E	EARTH EXPLORATION-SATELLITE (active) 5.562E		

FIXED	FIXED		
INTER-SATELLITE			
MOBILE 5.558	MOBILE 5.558		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149 5.562A	5.149 5.562A		
134 – 136			
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
Radio Astronomy	Radio Astronomy 5.149		
5.149			
136 – 141			
RADIO ASTRONOMY	RADIO ASTRONOMY		

RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite	Amateur-satellite		
5.149	5.149		
141 - 148.5			
FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
5.149	5.149		
148.5 - 151.5			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		

RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing	
5.1495.340	5.149 5.340		

151.5 - 158.5GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
151.5 - 155.5 FIXED MOBILE RADIO ASTRONOMY RADIO LOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIO LOCATION 5.149		
155.5 - 158.5 EARTH EXPLORATION- SATELLITE (passive) 5.562F FIXED MOBILE	EARTH EXPLORATION- SATELLITE (passive) 5.562F FIXED MOBILE		

RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B	Passive Sensing	
5.149 5.562G	5.149 5.562G		

158.5 - 202 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
158.5 – 164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		
164 – 167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Passive Sensing	

5.149 5.340	5.149 5.340		
167 - 174.5			
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
INTER-SATELLITE			
MOBILE 5.558	MOBILE 5.558		
5.149	5.149		
174.5-174.8			
FIXED	FIXED		
INTER-SATELLITE			
MOBILE 5.558	MOBILE 5.558		
174.8-182			

EARTH EXPLORATION- SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive)	Passive Sensing at 174.8 - 191.8 GHz	
182-185 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	Passive Sensing at 174.8 - 191.8 GHz	
185-190 EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		

INTER-SATELLITE 5.562H			
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing at 174.8 - 191.8 GHz	
190-191.8			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing at 174.8 - 191.8 GHz	
5.340	5.340		
191.8-200			
FIXED	FIXED		
INTER-SATELLITE			
MOBILE 5.558	MOBILE 5.558		

MOBILE-SATELLITE	MOBILE-SATELLITE		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.149 5.341 5.554	5.149 5.341 5.554		
200-202			
EARTH EXPLORATION- SATELLITE (passive)	EARTH EXPLORATION- SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.149 5.340 5.341 5.563A	5.149 5.340 5.341 5.563A		

202 - 248 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
202-209 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.341 5.563A	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.341 5.563A	Passive Sensing	
209-217 FIXED FIXED-SATELLITE (Earth-to- space) MOBILE RADIO ASTRONOMY	FIXED FIXED-SATELLITE (Earth-to- space) MOBILE RADIO ASTRONOMY		

5.149 5.341	5.149 5.341		
217-226			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B		
5.149 5.341	5.149 5.341		
226-231.5			
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		

SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	Passive Sensing at 226 - 232 GHz	
5.149 5.340	5.149 5.340		
231.5-232 FIXED MOBILE Radiolocation	FIXED MOBILE Radiolocation		
232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE		

Radiolocation	Radiolocation		
235-238 EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE (space-to- Earth) SPACE RESEARCH (passive) 5.563A	EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE (space-to- Earth) SPACE RESEARCH (passive) 5.563A	Passive Sensing	
238-240 FIXED FIXED-SATELLITE (space-to- Earth) MOBILE RADIOLOCATION	FIXED FIXED-SATELLITE (space-to- Earth) MOBILE RADIOLOCATION		

RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
240-241			
FIXED	FIXED		
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION		
241-248			
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite	Amateur-satellite		
5.138 5.149	5.138 5.149		

248 - 3000 GHz

ITU Region 1 Allocations	South African Allocations	Typical Applications	Comments
248 – 250 AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	AMATEUR AMATEUR-SATELLITE Radio Astronomy 5.149		
250-252 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.563A	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.340 5.563A	Passive Sensing	

252-265			
FIXED	FIXED		
MOBILE	MOBILE		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.149 5.554	5.149 5.554		
265-275			
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		

MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149 5.563A	5.149 5.563A		
275-1 000 (Not allocated) 5.565	275-1 000 (Not allocated) 5.565		
1000 – 3000 (Not allocated)	1000-3000 (Not allocated)		

SECTION 4: SOUTH AFRICAN NATIONAL FOOTNOTES

NF 1 (Fixed Links) Suppressed

In the Republic of South Africa, fixed radio links are frequently used for various purposes within the telecommunications and broadcast networks, on either a permanent or temporary basis (exclusive or shared). Usually the justification for using a radio link instead of a wired or optical fibre link relates to active national regulations, policies, geography or economics. They are used to provide fixed communication links between stations in a network supporting a different service (e.g. such as mobile telephony), whereas such an application is known as 'infrastructure' or 'backhaul'. The fixed radio links applications are also frequently referred to as Fixed Wireless Systems (FWS), a term recently adopted by ITU-R SG 9.

NF 2 (Relevant to the Northern Cape Province)

Chapter 2 of the Astronomy Advantage Act, 2007 (Act No. 21 of 2007) (AGA Act) 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 as an astronomy advantage area. Any existing and planned radio astronomy requires protection from harmful interference which may be caused by radio communication services. The protection requirements for the radio astronomy services are determined by the threshold levels specified in Recommendation ITU-R RA.769-2. The only planned radio astronomy observatory in the Republic of South Africa, at this stage is the Square Kilometre Array where the core antenna array station and the remote array stations may be placed at locations yet to be determined in the Northern Cape Province.

Radiocommunications with transmitters located within the radio astronomy advantage areas which operate within the radio frequency spectrum bands allocated for radio astronomy will be subjected to the provision of the AGA Act. All transmitters located or to be located within the astronomy advantage areas will be subject to section 25 of the AGA Act which talks to authorisations and submission of impact assessment report(s). Where authorization has been granted in line with the AGA Act; 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 another 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.

NF 3 (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.

NF 4 (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.

NF 5 (138 - 174 MHz) Suppressed

The land mobile sub-bands within the VHF High band are now in line with the rest of ITU Region 1.

NF 6 (140.5 - 141 // 152.05 - 152.5 MHz) Suppressed

These frequency bands are allocated for use by alarm systems.

NF 7 (148 - 149.9 MHz)

This band was allocated internationally at WARC 92 for the mobile satellite systems (MSS). This band is allocated for the Earth-to-space direction, and is extended up to 150.05 MHz. The space-to-Earth link is generally provided at either 137 - 138 MHz or 400.15 - 401 MHz, depending on the system. MSS cannot cause or claim interference from other stations in this band in accordance with ITU-R Footnote 5.221 (WRC 03).

NF 8 (150.05 - 151 MHz)

This band is no longer allocated to paging systems. Since there is a decline in the use of paging, the band is now allocated to load shedding and burglar alarm systems. The channels 150.550 MHz and 150.5625 MHz are used for load shedding countrywide.

NF 9 (161.875 - 173.875 MHz)

The band is used for sonobouy by maritime. 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. However, there is still a need for further sharing studies to be conducted. Care will be taken in making assignments near the coast in this band.

NF 10 (216 - 246 MHz) Suppressed

T-DAB is temporarily allocated in order to allow field testing of Eureka 147 (the GE06 broadcast plan should be consulted) standard. The use of wireless

microphones for services ancillary to Broadcasting (SAB) and services ancillary to programme (SAP) making will continue. Users of wireless microphones will have to approach the Authority for co-ordination and licensing.

NF 11 (336 - 366 MHz)

Within this frequency range the band 336-344 MHz paired with 356-364 MHz is allocated to fixed services on a primary basis. This spectrum is potentially very useful for providing electronic communications services considering its excellent propagation conditions. The bands 344-346 MHz and 364-366 MHz are allocated to Alarm monitoring and tracking services

NF 12 (380 - 399.9 MHz)

This band has been designated for use by digital trunked mobile radio for emergency services in line with CEPT T/R 22-05. The frequency bands 380-385 MHz paired with 390-395 MHz are allocated to Public Protection and Disaster Relief (PPDR) applications in line with ITU Resolution 646 (WRC-03). The frequency bands 387-390 MHz paired with 397-399.9 MHz are allocated to digital trunking systems.

NF 13 (407.625 - 413 / 417.625 - 423 MHz)

The frequency bands 407.625 - 410 MHz // 417.625 - 420 MHz are currently used by Government for public safety.

NF 14 (430 - 440 MHz)

This band is allocated to the amateur service in South Africa, as elsewhere in 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 S5.138). It has effectively been treated as an ISM band in South Africa for a number of years. Furthermore, the regulation is in terms of Section 31(6) of the ECA which specifies the use of the band for non specific short range devices on an unlicensed basis, subject to obligatory type approval. 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 in the band.

NF 15 (440 - 450 MHz) Suppressed

This band was used primarily for fixed links. The aim in the medium term is to use this band primarily for mobile services (PMR in particular). A 5 MHz TX/RX separation is to be used, in accordance with the European DSI. Repeater systems and a significant number of fixed links have been migrated out of this

band. The band (440 - 441 / 445 - 446 MHz) is allocated to fixed point-to-multipoint data services such as scanning telemetry and dual frequency alarm systems. The band (446 - 446.100 MHz) is now allocated to the PMR446 service. The band (441 - 441.100 MHz) is now used for simplex mobile systems.

NF 16 (450 - 470 MHz)

The band 450 – 470 MHz was allocated for IMT on a primary basis by WRC 07 in Region 1 through ITU-R footnote 5.286AA. South Africa's position was opposed to this allocation prior to the conference. A separate consultative process will be undertaken to determine the viability of the decision post the conference. In case where the WRC 07 decision prevails, existing services in this band will continue to be protected. New none IMT assignments in the band will be done subject to being assigned on a secondary basis should the WRC 07 decision prevails. This is one of the bands in the ultra high frequency bands which are suitable to cover long distances and sparsely populated areas due to the propagation characteristics of the UHF bands.

NF 17 (790 – 862 MHz)

The band 790 – 862 MHz is allocated for IMT on primary basis in line with WRC 07 through ITU-R footnote 5.316A, 5.316B, 5.317A. Due to the complexity of planning for the dual illumination period which was initially preferred for 1 November 2008 to 1 November 2011, the Authority has opted for worst case scenario planning. Therefore, the allocation will become effective after the dual illumination period. The process for the actual assignment will take place prior to the end of the dual illumination period. Government Gazette 29345 of the 31 October 2006, which allocates channels 65 and 66 (bands 822 – 830 MHz and 830 – 838 MHz) to none broadcasting assignments, still applies.

NF 18 (872 - 905 // 917 - 950 MHz)

This band is allocated on a shared basis between Wireless Access Service and mobile (primarily GSM and private mobile radio). There are a number of different WAS that could operate in this band, including systems based on TACS, GSM and CDMA.

NF 19 (876 - 880 // 921 - 925 MHz)

In South Africa, this band offers the possibility to use systems such as GSM-R; GSM-based PMR; IMT; TETRA etc. The Authority has decided to allocate this band to digital trunking systems on national basis. This does not preclude the use of other systems such as those listed in certain projects where it might be feasible.

NF 20 (880 - 890 / 925 - 935 MHz) Suppressed

This band is allocated to extend GSM (E-GSM). Assignments have been made to mobile cellular operators.

NF 21 (915 - 921 MHz)

In South Africa this band is allocated as follows:

- Vehicle location systems in 915.025 -915.200 MHz band on licensed basis.
- Band 915.2 to 915.4 MHz is allocated to single fixed narrowband (25 kHz channel spacing) passive tag RFID systems with power output of the reader not exceeding 4W EIRP.
- Band 915.4 to 919.7 MHz is allocated to passive RFID systems employing Frequency Hopping Spread spectrum (FHSS) with 100 kHz guard band on either side with channels 200 kHz wide.

NF 22 (1452 - 1492 MHz)

This band has been allocated internationally for use for digital broadcasting (S-DAB and T-DAB). Draft ECC decision ECC/DEC/(03)AB is to implement the addition of seven T-DAB blocks, covering the range 1467.5-1479.5 MHz, as decided in June 2002 in Maastricht, in conjunction with the transfer of part of the Wiesbaden plan. The frequency band 1479.5-1492 MHz has been designated for use by satellite DAB systems according to draft decision ECC/DEC/(03)AB. The fixed links that were previously allocated to this band have been migrated to the 1452 - 1464 MHz (paired with 1517.5 - 1529.5 MHz) and some have been migrated to frequencies above 3 GHz.

NF 23 (1710 - 1785 / 1805 – 1880 MHz)

These are the frequencies on which the GSM-1800 system operates (CEPT Recommendation T/R 22-07 refers). Sharing of these frequencies by Wireless Access Services applications is also likely to be possible. This band was also identified for future IMT developments.

NF 24 (1880 – 1920 MHz) Suppressed

This band is allocated to wireless access services. No new fixed links assignments will be made within this band. The allocation of this band to wireless access systems is important to South Africa.

NF 25 (1885 - 2025 and 2110 - 2200 MHz)

These bands are used worldwide for the implementation of third generation systems. The bands 1980 - 2010 and 2170 - 2200 MHz are intended for the

satellite component of IMT. The frequency bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz are generally referred to as the terrestrial components of the IMT core bands.

NF 26 (1920 – 2010 MHz)

The Authority will no longer assign fixed links in this band as it has been reserved for the Satellite Component of IMT (WRC 07).

NF 27 (2025 - 2110 and 2200 - 2290 MHz)

Channel arrangements for the use of these bands for fixed services are described in both ITU-R Recommendation F.1098 and CEPT Recommendation T/R 13-01. These recommendations describe a channel plan in which the band is divided into dual-frequency channels with carrier spacing of 14 MHz and a Tx/Rx separation of 175 MHz. Carrier spacing of 7 MHz, 3.5 MHz and 1.75 MHz are also possible by means of channel subdivision. This channel arrangement is adopted in these bands for fixed services, while a certain portion of the band could be used for Wireless Access Services.

The sub-division of the band is as follows:

- 2025 – 2075 / 2200 - 2250 MHz to be used for Fixed Links
- 2075 - 2110 / 2250 - 2285 MHz to be used for Fixed Links
- 2285 - 2290 MHz to be used for WAS
- 2290 – 2300 to be used for Fixed Links.

NF 28 (2300 – 2400 MHz)

The band 2300 - 2400 MHz is allocated for IMT on a primary basis in line with WRC 07 through ITU-R footnote 5.384A. Existing services in this band will continue to be protected until migration is completed.

NF 29 (2400 - 2500 MHz)

The band 2400 – 2500 is allocated to ISM (Industrial, Scientific and Medical) equipment on a primary basis. The sub-band 2483.5 – 2500 MHz is allocated for mobile-satellite systems in the space-to-Earth direction.

NF 30 (2500 - 2700 MHz) Suppressed

The use of this band by MMDS has been discontinued. Part of this band 2500 – 2690 MHz is allocated to Broadband Wireless Access services. The Authority

undertook an enquiry to determine criteria to access this band. The results of this will be made available in due course in a separate process.

NF 31 (3400 – 3600 MHz) Suppressed

South Africa supported identification of the band 3 400 – 3 600 MHz for IMT developments at WRC 07. The Authority has undertaken a separate consultative process to determine the criteria to access this band.

NF 32 (3600 – 4200 MHz)

The band 3600 – 4200 MHz is used on a national basis for high capacity, core network telecommunication services under the fixed service using point to point (PTP) topologies 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 on a co-primary and strictly co-ordinated basis

NF 33 (4400 – 5000 MHz)

The band 4400 – 5000 MHz is allocated to electronic news gathering (ENG)/ outside broadcasting (OB) services under the FS and will be shared with Government Services.

NF 34 (5725 – 5850 MHz)

The band 5725 – 5850 MHz is designated as an ISM band through ITU-R footnote 5.150. In line with international trends and national objectives for rural development, the use of this band for non ISM applications is allowed on unlicensed or license-exempt basis provided there is adherence to provisions outlined below.

Frequency Range	Maximum Power	Modulation	Restrictions
5.725 - 5.850 GHz	1 watt peak eirp	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 eirp	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 eirp 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.
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The Authority reserves the right to require users to change the frequency, reduce the power, or cease operations, where harmful interference is established.

NF 35 (5850 – 6425 MHz)

The band 5850 – 6425 MHz, part of the C-band, is used extensively for FSS (Earth-to-space) applications. This band is also shared with FS.

The C-band is also used for satellite news gathering (SNG) operations, which will require frequency co-ordination on a case-by-case basis. As far as it is possible users are encouraged to use the Ku-band for SNG operations in South Africa in order to avoid the interference problems associated with C-band SNG operations.

For reasons of efficient spectrum use by all services in the C-band, deployment of large earth station antennae (greater than 2.4 metres diameter) should be concentrated at selected suitable sites in order to avoid interference between the services sharing the spectrum. This approach would additionally ensure increased reliability of these services.

NF 36 (5850 – 5925 MHz)

The band 5850 – 5925 MHz is used for FSS (Earth-to-space) and allocated for temporary deployments of (ENG/OB) under FS on a strictly coordinated basis.

NF 37 (5925 – 6425 MHz)

This band is used on a national basis for high capacity core network electronic communication services under the FS using a PTP topology over long hop lengths and shared with FSS (Earth-to-space).

NF 38 (6425 – 7110 MHz)

This band is used on a national basis for high capacity core network electronic communication services under the FS using a PTP topology over long hop lengths and shared between FS, NGSO MSS (space-to-Earth) feeder links and geo-stationary satellite orbit (GSO) FSS (Earth-to-space) systems under a strictly controlled and co-ordinated basis.

NF 39 (7110 – 7425 MHz)

This band is used on a national basis for medium to high capacity electronic communication services under the FS using a PTP topology over long hop lengths.

The existing analogue systems utilise the channelization arrangement according to International Radio Consultative Committee (CCIR) Report 934 Annex V. No new analogue systems will be assigned in this band.

NF 40 (7425 – 7750 MHz)

This band is used on a national basis for medium to high capacity electronic communication services under the FS using a PTP topology over long hop lengths.

Analogue systems utilise the channelization arrangement according to CCIR Report 934 Annex V. The channelization arrangement for new systems in this band is ITU-R Recommendation F.385 Annex 3.

NF 41 (7725 – 8275 MHz)

This band is used on a national basis for high capacity electronic communication services under the FS using a PTP topology, mainly for core networks over long hop lengths.

The channelization arrangement for this band is ITU-R Recommendation F.386 Annex 1.

NF 42 (8275 – 8500 MHz)

This band is used on a national basis for low to medium capacity electronic communication services under the FS using a PTP topology over long hop lengths. As other services are introduced into this band appropriate sharing and co-ordination procedures will be established.

The channelization arrangement for this band is ITU-R Recommendation F.386 Annex 3.

NF 43 (10.7 – 11.7 GHz)

The band 10.7 – 11.7 GHz is used on a national basis for high capacity core network and access network electronic communication services under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 10.7 – 11.7 GHz is ITU-R Recommendation F.387.

The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FSS (space-to-Earth)

The Authority shall undertake a consultative process to determine the feasibility of coexistence of services and upgrading DTH to a primary status within 24 months of coming into force of this plan.

NF 44 (12.75 – 13.25 GHz)

The band 12.75 – 13.25 GHz is used on a national basis for low, medium and high capacity access and core electronic communications networks under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 12.75 – 13.25 GHz is ITU-R Recommendation F.497.

NF 45 (14.0 – 14.5 GHz)

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

The bands 10.95 – 11.2 GHz, 11.45 – 11.7 GHz and 12.5 – 12.75 GHz, part of the Ku-band are also used extensively for FSS (space-to-Earth) applications. The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FS. The Ku-band is the preferred band for SNG operations.

For reasons of efficient spectrum use by all services in the Ku-band, the deployment of large earth station antennae greater than 2.4 metres diameter should be concentrated at selected suitable sites in order to avoid interference between the services sharing the spectrum. This approach would additionally ensure increased reliability of these services.

NF 46 (14.5 – 15.35 GHz)

The band 14.5 – 15.35 GHz is used on a national basis for low and medium capacity access electronic communication networks under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 14.5 – 15.35 GHz is ITU-R Recommendation F.636.

NF 47 (17.7 – 19.7 GHz)

The band 17.7 – 19.7 GHz is used on a national basis for low, medium and high capacity access electronic communications networks under the FS using a PTP topology over short hop lengths. The feasibility study referred to in NF 43 applies.

The channelization arrangement for the band 17.7 – 19.7 GHz is ITU-R Recommendation F.595 Annex 1.

NF 48 (21.2 – 23.6 GHz)

The band 21.2 – 23.6 GHz is used on a national basis for low, medium and high capacity access networks under the FS using a PTP topology over short hop lengths.

The current channelization arrangement for the band 21.2 – 23.6 GHz is ITU-R Recommendation F.637 Annex 1. As part of ITU-R Recommendation F.637 Annex 1 the band 21.2 – 23.6 GHz is subdivided into ten sub-bands.

NF 49 (24.5 – 26.5 GHz)

The band 24.5 – 26.5 GHz is allocated to low, medium and high capacities core electronic communication networks under the FS using PTP and PTMP topologies over short hop lengths.

The channelization arrangement for the band 24.5 – 26.5 GHz is in accordance with CEPT Recommendation T/R 13-02 Annex B.

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 25.5 to 27 GHz frequency range in the Earth Exploration Satellite (space-to-earth) service.

NF 50 (27.5 – 28.35 GHz)

The bands 27.5 – 28.35 GHz (base station to subscriber) and 29.1 – 29.25 GHz (subscriber to base station) are allocated to broadband service - local multipoint distribution services (LMDS) under the FS using a PTMP topology over short hop lengths.

NF 51 (37.0 – 39.5 GHz)

The band 37.0 – 39.5 GHz is allocated to low, medium and high capacity PTP electronic communications network systems under the FS over very short hop lengths.

The channelization arrangement for the band 37.0 – 39.5 GHz is in accordance with ITU-R Recommendation F.749 Annex 1.

NF 52 (71 – 76 GHz)

The bands 71 – 76 GHz & 81 – 86 GHz are allocated to very high capacity Broadband Fixed Wireless Systems in the higher millimetre wave bands, with 1 –

2 km hop lengths (line-of-sight conditions). Radio frequency channel arrangements for fixed service systems operating in the bands 71-76 GHz and 81-86 GHz are according to CEPT Rec. (05)07). Maximum power levels are also specified with an EIRP limit of 55dBW and a transmit power limit (at the antenna port) of +30dBm.

APPEDIX A: ITU – R FOOTNOTES

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

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

5.55 *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

5.56 The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-07)

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

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

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

5.66 *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)

5.68 *Alternative allocation:* in Angola, Burundi, Congo (Rep. of the), Malawi, the Dem. Rep. of the Congo, Rwanda and South Africa, the band 160-200 kHz is allocated to the fixed service on a primary basis. (WRC-03)

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, Rwanda, 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-07)

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

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

5.73 The band 285-325 kHz (283.5-325 kHz in Region 1) in the maritime 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.

5.79 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)

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

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

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

5.84The 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, South Africa, Swaziland and Zimbabwe, the band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-03)

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

5.90In 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.

5.92Some 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.

5.96In Germany, Armenia, Austria, Azerbaijan, Belarus, 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 bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-03)

5.98*Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, Moldova, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

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

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

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

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

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

5.107 *Additional allocation:* in Saudi Arabia, Eritrea, Ethiopia, Iraq, the Libyan Arab Jamahiriya, Lesotho, 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-03)

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.

5.112 *Alternative allocation:* in Denmark, Malta, Serbia 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-07)

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

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

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

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

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

5.117 *Alternative allocation:* in Côte d'Ivoire, Denmark, Egypt, Liberia, Malta, Serbia, 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-07)

5.118 *Additional allocation:* in the United States, Mexico, Peru and Uruguay, the band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-03)

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, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-07)

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

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

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

5.133 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, 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-07)

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.

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

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

5.140 *Additional allocation:* in Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-03)

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

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

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

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

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

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

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

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

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

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

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

13 360-13 410 kHz,	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)

5.150 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)

5.155 *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.

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

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

5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-2000)

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, Slovakia, 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-07)

5.163 *Additional allocation:* in Armenia, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., 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-07)

5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Lebanon, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the band 47-68 MHz, in South Africa the band 47-50 MHz, in the Czech Rep. the band 66-68 MHz, and in Latvia and Lithuania the 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 band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band. (WRC-07)

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

5.169 *Alternative allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, 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.

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

5.175 *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, Slovakia, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-07)

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

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

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

5.187 *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)

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

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

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

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

5.205 *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 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,

Resolution 739 (Rev.WRC-07) applies. (WRC-07)

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

5.210 *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, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-07)

5.212 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., Congo (Rep. of the), Gabon, Gambia, Ghana, Guinea, Iraq, Libyan Arab Jamahiriya, Jordan, Lesotho, Liberia, Malawi, Mozambique, Namibia, 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-07)

5.214 *Additional allocation:* in Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Montenegro, Serbia, Somalia, Sudan and Tanzania, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

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

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

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

5.221 Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency

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

Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, the Libyan Arab Jamahiriya, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-07)

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

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

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

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

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)

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

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

5.237 *Additional allocation:* in Congo (Rep. of the), Eritrea, Ethiopia, Gambia, Guinea, the Libyan Arab Jamahiriya, Malawi, 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-07)

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, Kazakhstan and Ukraine, the 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, nor claim protection from, nor constrain the use and development of the mobile service systems and mobile-satellite service systems operating in the 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-03)

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, Israel 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-07)

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

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

5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Romania, Singapore, Somalia, Tajikistan, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

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

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

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

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

5.268 Use of the band 410-420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed $-153 \text{ dB(W/m}^2\text{)}$ for $0^\circ \leq \delta \leq 5^\circ$, $-153 + 0.077 (\delta - 5) \text{ dB(W/m}^2\text{)}$ for $5^\circ \leq \delta \leq 70^\circ$ and $-148 \text{ dB(W/m}^2\text{)}$ for $70^\circ \leq \delta \leq 90^\circ$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. 4.10 does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. (WRC-97)

5.269 *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).

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

5.273 *Different category of service:* in the Libyan Arab Jamahiriya, the allocation of the bands 430-432 MHz and 438-440 MHz to the radiolocation service is on a secondary basis (see No. 5.32). (WRC-03)

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

5.275 *Additional allocation:* in Croatia, Estonia, Finland, Libyan Arab Jamahiriya, The Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Slovenia, the bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

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

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Moldova, Mongolia, Uzbekistan, Poland, 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-07)

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

5.280 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.

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

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)

5.286B 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 In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-2. (WRC-07)

5.288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-2. (WRC-03)

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.

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

5.294 *Additional allocation:* in Saudi Arabia, Burundi, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, the Libyan Arab Jamahiriya, Kenya, Malawi, the Syrian Arab Republic, Sudan, Chad and Yemen, the band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-07)

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

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

5.300 *Additional allocation:* in Saudi Arabia, Egypt, Israel, the Libyan Arab Jamahiriya, Jordan, Oman, the Syrian Arab Republic and Sudan, the band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-07)

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

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

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

5.312 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 645-862 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

5.314 *Additional allocation:* in Austria, Italy, Moldova, Uzbekistan, Kyrgyzstan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis. (WRC-07)

5.315 *Alternative allocation:* in Greece, Italy and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis. (WRC-2000)

5.316 *Additional allocation:* in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Greece, Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Mali, Monaco, Montenegro, Norway, the Netherlands, Portugal, the United Kingdom, the Syrian Arab Republic, Serbia, Sweden and Switzerland, the band 790-830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830-862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. This allocation is effective until 16 June 2015. (WRC-07)

5.316A *Additional allocation:* in Spain, France, Gabon and Malta, the band 790-830 MHz, in Angola, Bahrain, Benin, Botswana, Congo (Rep. of the), French overseas departments and communities of Region 1, Gambia, Ghana, Guinea, Kuwait, Lesotho, Lebanon, Malawi, Morocco, Mauritania, Mozambique, Namibia, Niger, Oman, Uganda, Poland, Qatar, Rwanda, Senegal, Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Yemen, Zambia and Zimbabwe, the band 790-862 MHz, in Georgia, the band 806-862 MHz, and in Lithuania, the band 830-862 MHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis subject to the agreement by the administrations concerned obtained under No. 9.21 and under the GE06 Agreement, as appropriate, including those administrations mentioned in No. 5.312 where appropriate. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause unacceptable interference to, nor claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. Frequency assignments to the mobile service under this allocation in Lithuania and Poland shall not be used without the agreement of the Russian Federation and Belarus. This allocation is effective until 16 June 2015. (WRC-07)

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

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

5.319 *Additional allocation:* in Belarus, the Russian Federation and Ukraine, the bands 806-840 MHz (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, Egypt, Spain, the Libyan Arab Jamahiriya, Morocco, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. 9.21. (WRC-2000)

5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Hungary, Kazakhstan, Moldova, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz is 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-07)

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

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

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

5.328B The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of

Nos. 9.12, 9.12A and 9.13. Resolution 610 (WRC-03) shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution 610 (WRC-03) shall only apply to transmitting space stations. In accordance with No. 5.329A, for systems and networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the provisions of Nos. 9.7, 9.12, 9.12A and 9.13 shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space). (WRC-07)

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

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

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

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

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

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

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

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

5.338 In Mongolia, Kyrgyzstan, Slovakia, the Czech Rep. and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-07)

5.338A In the 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 and 51.4-52.6 GHz, Resolution 750 (WRC-07) applies. (WRC-07)

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

5.340 All emissions are prohibited in the following bands:

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

31.3-31.5 GHz,
 31.5-31.8 GHz, in Region 2,
 48.94-49.04 GHz, from airborne stations
 50.2-50.4 GHz²,
 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.

5.342 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Uzbekistan, Kyrgyzstan and Ukraine, the band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the band 1 452-1 492 MHz is subject to agreement between the administrations concerned. (WRC-2000)

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)*.

5.348 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 $-150 \text{ dB(W/m}^2\text{)}$ in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix 5. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. 5.43A does not apply. (WRC-03)

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

5.349 *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33). (WRC-07)

5.350 *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)

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)

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

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)

5.353A 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), Egypt, Eritrea, Iraq, Israel, Kuwait, Lebanon, Malta, Qatar, Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-03)

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

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

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

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

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

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

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

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

5.365 The use of the band 1 613.8-1 626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under 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 bands 1 610-1 626.5 MHz and 5 000-5 150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21.

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

5.369 *Different category of service:* in Angola, Australia, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, the Libyan Arab Jamahiriya, Lebanon, Liberia, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, the Dem. Rep. of the Congo, Sudan, Swaziland, Togo and Zambia, the allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21 from countries not listed in this provision. (WRC-03)

5.371 *Additional allocation:* in Region 1, the bands 1 610-1 626.5 MHz (Earth-to-space) and 2 483.5-2 500 MHz (space-to-Earth) are also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. 9.21.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. 29.13 applies).

5.374 Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5-1 634.5 MHz and 1 656.5-1 660 MHz shall not cause harmful interference to 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/m²) in 10 MHz and -194 dB(W/m²) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)

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

5.380A 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

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.

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

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

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

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

5.401 Not used.

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)

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

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

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

5.412 *Alternative allocation:* in Azerbaijan, 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-07)

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

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

5.415 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)

5.417 (SUP - WRC-2000)

5.417A In applying provision No. 5.418, in Korea (Rep. of) and Japan, *resolves* 3 of Resolution 528 (**Rev.WRC-03**) is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial

^{*} *Note by the Secretariat:* This Resolution was revised by WRC-03.

broadcasting service to additionally operate on a primary basis in the band 2 605-2 630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. 5.416. The provisions of No. 5.416 and Table 21-4 of Article 21 do not apply. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) in the band 2 605-2 630 MHz is subject to the provisions of Resolution 539 (Rev.WRC-03). The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 605-2 630 MHz for which complete Appendix 4 coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

$-130 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $0^\circ \leq \theta \leq 5^\circ$
$-130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $5^\circ < \theta \leq 25^\circ$
$-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $25^\circ < \theta \leq 90^\circ$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. In the case of the broadcasting-satellite service (sound) networks of Korea (Rep. of), as an exception to the limits above, the power flux-density value of $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ shall be used as a threshold for coordination under No. 9.11 in an area of 1 000 km around the territory of the administration notifying the broadcasting-satellite service (sound) system, for angles of arrival greater than 35° . (WRC-03)

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

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

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

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

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

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

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

5.423 In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are 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, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

5.430 *Additional allocation:* in Azerbaijan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

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

5.431 *Additional allocation:* in Germany, Israel and the United Kingdom, the band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-03)

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

5.440 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)

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

5.444 The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the band 5 030-5 091 MHz, the requirements of this

system shall take precedence over other uses of this band. For the use of the band 5 091-5 150 MHz, No. 5.444A and Resolution 114 (Rev.WRC-03) apply. (WRC-07)

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

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution 114 (Rev.WRC-03);
- after 1 January 2016, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radio-navigation service. (WRC-07)

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

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

5.446 *Additional allocation:* in the countries listed in Nos. 5.369 and 5.400, the band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. 9.21. In Region 2, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. 5.369 and 5.400, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dB(W/m²) in any 4 kHz band for all angles of arrival.

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

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

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

5.447 *Additional allocation:* in Côte d'Ivoire, Israel, Lebanon, Pakistan, 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 (WRC-03) do not apply. (WRC-07)

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

5.447B *Additional allocation:* the band 5 150-5 216 MHz is also allocated to the fixed-satellite service (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/m²) in any 4 kHz band for all angles of arrival.

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

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

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

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

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

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

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

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

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

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

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

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

5.454 *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Mongolia, 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-07)

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)

5.456 *Additional allocation:* in Cameroon, the band 5 755-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

5.457 Not used.

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

5.457B In the bands 5 925-6 425 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, the Libyan Arab Jamahiriya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution 902 (WRC-03). (WRC-03)

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

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

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

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

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

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

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

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

5.462 (SUP - WRC-97)

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

$-174 \text{ dB(W/m}^2\text{)}$ in a 4 kHz band	for $0^\circ \leq \theta < 5^\circ$
$-174 + 0.5 (\theta - 5) \text{ dB(W/m}^2\text{)}$ in a 4 kHz band	for $5^\circ \leq \theta < 25^\circ$
$-164 \text{ dB(W/m}^2\text{)}$ in a 4 kHz band	for $25^\circ \leq \theta \leq 90^\circ$

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

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

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

5.466 *Different category of service:* in Israel, Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. 5.32). (WRC-03)

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

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Moldova, 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-03)

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

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

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

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

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

5.473 *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).

5.475 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, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Trinidad and Tobago, and Yemen, the allocation of the band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. 5.33). (WRC-07)

5.478 *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 Germany, Angola, Brazil, China, Costa Rica, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

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

Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, service is not applicable. (WRC-07)

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

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

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

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

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

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

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

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

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

5.494 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, Chad, Togo and Yemen, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03) **5.495** *Additional allocation:* in Bosnia and Herzegovina, France, Greece, Liechtenstein, Monaco, Montenegro, Uganda, Romania, Serbia, Switzerland, Tanzania and Tunisia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-07)

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)

5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, the Syrian Arab Republic, Singapore, Sudan, Chad and Tunisia, the band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

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

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

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

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

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

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

- in the band 13.77-13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed:
 - i) $4.7D + 28 \text{ dB(W/40 kHz)}$, 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) $49.2 + 20 \log(D/4.5) \text{ dB(W/40 kHz)}$, 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) $66.2 \text{ dB(W/40 kHz)}$ for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m;
 - iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater;
- the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

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

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

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

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

5.504C In the band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Lesotho, 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, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. 5.29. (WRC-03)

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

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

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

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

5.508 *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Italy, Libyan Arab Jamahiriya, 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-07)

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

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

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

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

5.511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. 9.11A. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43-15.63 GHz band shall not exceed the level of $-156 \text{ dB(W/m}^2\text{)}$ in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time. (WRC-2000)

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

5.511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4-15.43 GHz and 15.63-15.7 GHz in the space-to-Earth direction and 15.63-15.65 GHz in the Earth-to-space direction. In the bands 15.4-15.43 GHz and 15.63-15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival. In the band 15.63-15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival, it shall coordinate under No. 9.11A with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63-15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. 4.10 applies). (WRC-97)

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

5.513 *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, Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan and Sudan, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 21.3 and 21.5 shall apply. (WRC-07)

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

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

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix 30A, nor

put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

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

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)

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

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

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

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

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

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

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, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, the band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band. (WRC-07)

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

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

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

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

5.529 The use of the bands 19.7-20.1 GHz and 29.5-29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. 5.526.

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

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

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

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

5.535A The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. 9.11A, but not subject to the provisions of No. 22.2, except as

indicated in Nos. 5.523C and 5.523E where such use is not subject to the provisions of No. 9.11A and shall continue to be subject to Articles 9 (except No. 9.11A) and 11 procedures, and to the provisions of No. 22.2. (WRC-97)

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

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

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

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

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

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

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

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

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

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

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

5.542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC-07)

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

5.543A In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines,

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

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

5.545 *Different category of service:* in Armenia, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. 5.33). (WRC-07)

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33). (WRC-07)

5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 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, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

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

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Mongolia, 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-07)

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

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

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

-209 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631 and shall apply over the whole sky and for elevation angles higher than the minimum

operating angle θ_{min} of the 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-07)

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 $-151.8 \text{ dB(W/m}^2\text{)}$ 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 $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ for all angles of arrival. (WRC-97)

5.557 *Additional allocation:* in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (WRC-97)

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

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

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

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

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

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

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

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

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

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

5.562C Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-148 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ 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 $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival. (WRC-2000)

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

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

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

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

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