Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID-AFRIKA

Vol. 469 Pretoria, 15 July Julie 2004 No. 26584

AIDS HELPLINE: 0800-0123-22 Prevention is the cure

CONTENTS

GENERAL NOTICE

NOTICE 1442 OF 2004

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NOTICE IN TERMS OF SECTION 29 OF THE TELECOMMUNICATIONS ACT (ACT 103 OF 1996) REGARDING THE SOUTH AFRICAN TABLE OF FREQUENCY ALLOCATIONS.

In terms of section 29 of the Telecommunications Act (Act 103 of 1996) as amended and pursuant to the following Government Gazette notices:

Government Gazette No 24304, Notice 46 of 2003;
Government Gazette No 25619, Notice 2647 of 2003;
Government Gazette No 26225, Notice 562 of 2004;

the independent Communications Authority of South Africa (ICASA) hereby adopts and makes known the frequency band plan contained herein.

MANDLA LANGA
CHAIRPERSON
ICASA

South African Table of Frequency Allocations.

1 Executive Summary.

This band plan covers the range 20MHz to 70GHz. Previously this range was broken up into two parts, 20MHz – 3GHz (SABRE 1) and 3GHz – 70GHz (SABRE-2). ICASA has now consolidated those tables of allocations into one band plan known as South African Table of Frequency Allocations. A number of commentators made this suggestion during the public hearings.

The Authority will embark on processes to extend the range of this Table of Allocations to frequencies above and below the current limits. The migration process has had its successes and failures. Some migration time-frames have been revised whilst others are maintained at their original deadlines. One can mention that the 2008 deadline for the current public trunking operators has been reviewed at the request of the public trunking operators. The use of the band 406.1 - 407.625 // 416.1 - 417.625 MHz by the national electricity utility has been re-instated.
The following are some of the changes implemented in this band plan:

- The Radio Frequency Identification systems (RFID) allocation in the 900MHz band.
- Pre-programmed low power PMR446 two way radios. These radios are widely available in other parts of the world at affordable prices.
- Allocation of Broadband FWA in the 2.6GHz band,
- Public Protection and Disaster relief (PPDR) bands which includes 380 – 385//390-395MHz.
- Full allocation of 2x10MHz E-GSM spectrum. Previously the E-GSM allocation was 2 x 400 kHz short because of an allocation to a now defunct two-way paging service.
- Allocation of the 5GHz band to "*mobile*" so as to enable wireless LAN "Hotspots".
- Allocation of the band 14-14.5 GHz to aeronautical mobile to enable broadband internet access by aircraft passengers.
- At the WRC03 the South African delegation added the country name to an ITU Radio Regulation footnote which seeks to protect future radio astronomy activities in the 14GHz band.

In revising the band plan the Authority has taken into account that South Africa is bidding to host a Square Kilometre Array (SKA) installation for world wide radio astronomy activities.

2. General

This section provides notes to support and explain the band plan presented in APPENDIX A of this document. The notes relate in particular to those frequency bands where changes in usage are proposed. In most cases the notes are concerned with the rationale behind the proposed changes, or the strategy for migrating from the current to the proposed future position.

3. Fundamental principles

3.1 General

This section describes some of the most important principles that have driven the development of the band plan presented in this document.

The following are fundamental long term aims that are encompassed within the band plan:

- Updating the band plan with changes made by WRC97, WRC2000 and WRC03
- Allocating the spectrum that was previously reserved.
- Making spectrum available for new technologies and services, such as Fixed Wireless Access (FWA), digital trunked radio, mobile satellite systems, IMT 2000 etc.
- Increasing the amount of spectrum available for land mobile radio.

These objectives reflect international trends in spectrum management.

3.2 Alignment with ITU Region 1

South Africa is part of ITU Region 1 (as is Europe), and thus the country has an obligation to base its frequency allocations on those specified for Region 1 in the ITU Radio Regulations. Further, the band plan presented in this document has in many areas been based around band plans adopted by European countries, in order to make it easier to introduce new technologies and source equipment from Europe.

However, South Africa is different from Europe in many ways, and any decisions to follow Europe have not been taken without careful consideration. Where there may be benefits to South Africa in the use of technologies and equipment from outside Region 1, efforts have been taken to try to incorporate these within the band plan, or at least to avoid taking decisions that would prevent their use in the future.

3.3 Fixed Wireless Access.

An important aim of this band plan is to make spectrum available for a variety of different Fixed Wireless Access (FWA) technologies in different areas of the spectrum. This will ensure the availability of spectrum to Under-service Area licensees (USAL). Spectrum is available in a number of different bands, in some cases on an exclusive basis but in many cases on a shared basis. Between them it is believed that the allocations should provide the possibility for a wide variety of FWA systems to be used, which are available from a range of suppliers and are suitable for use in the range of scenarios required for South Africa.

The basis for sharing between FWA and other services will depend upon the case in question. Factors will include the locations where the other services (and the FWA) are required to be used, and technical characteristics of the

systems. For example, where the split is between 'urban' and 'rural' and the other service is already used in 'urban' areas (e.g. for cellular), then the 'rural' areas where FWA can be used will generally be those where it can be used without interfering with the other service (e.g. a suitable distance away from major population centres and major roads). The precise details of the sharing criteria will be established on a case-by-case basis and published as regulations.

4. Description of the Table of Frequency Allocations

The following table presents the band plan for the use of the radio spectrum in South Africa between 20 MHz and 70 GHz.
Frequencies are expressed:
– in kilohertz (kHz), up to and including 3 000 kHz;
– in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;
– in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.
However, where adherence to these provisions would introduce serious difficulties, reasonable departures are made.

The table is divided into the following columns:

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

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

Services are listed in alphabetical order according to the French language. 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. (WRC-2000)

The footnote references which appear to the right of the name of a service are applicable only to that particular service.

Limitations of Secondary Services: Secondary services are on a non-interference basis (NIB) to the primary services. Stations of a secondary service:

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

Column 2 - South African (SA) Allocations. This column indicates the range of frequencies associated with the main allocations (in MHz), once again divided into Primary and Secondary Services. This column contains only those services currently used in South Africa.

Column 3 - 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.

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.

Appendix A

South African Table of Frequency Allocations

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
19 995-20 010 kHz	19 995-20 010 kHz		
STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)		
5.111	5.111		
20 010-21 000 kHz	20 010-21 000 kHz		
FIXED	FIXED		
Mobile	Mobile		
21 000-21 450 kHz	21 000-21 450 kHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
21 450-21 850 kHz	21 450-21 850 kHz		
BROADCASTING	BROADCASTING		
21 850-21 870 kHz	21 850-21 870 kHz		
FIXED 5.155A	FIXED		
5.155			
21 870-21 924 kHz	21 870-21 924 kHz		
FIXED 5.155B	FIXED 5.155B		
21 924-22 000 kHz	21 924-22 000 kHz		
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)		
22 000-22 855 kHz	22 000-22 855 kHz		
MARITIME MOBILE 5.132	MARITIME MOBILE 5.132	Maritime HF communications, including DSC	ITU Appendix 17 Channelling plan ITU Appendix 25 Allotment Plan
5.156			
22 855-23 000 kHz	22 855-23 000 kHz		
FIXED	FIXED		
5.156			
23 000-23 200 kHz	23 000-23 200 kHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED		
Mobile except aeronautical mobile (R)			
5.156			
23 200-23 350 kHz	23 200-23 350 kHz		
FIXED 5.156A	FIXED 5.156A		
AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)		
23 350-24 000 kHz	23 350-24 000 kHz		
FIXED	FIXED		
MOBILE except aeronautical mobile 5.157	MOBILE except aeronautical mobile 5.157		
24 000-24 890 kHz	24 000-24 890 kHz		
FIXED	FIXED		
LAND MOBILE	LAND MOBILE		
24 890-24 990 kHz	24 890-24 990 kHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
24 990-25 005 kHz	24 990-25 005 kHz		
STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)		
25 005-25 010 kHz	25 005-25 010 kHz		
STANDARD FREQUENCY AND TIME SIGNAL	STANDARD FREQUENCY AND TIME SIGNAL		
Space research			
25 010-25 070 kHz	25 010-25 070 kHz		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
25 070-25 210 kHz	25 070-25 210 kHz		
MARITIME MOBILE	MARITIME MOBILE		
25 210-25 550 kHz	25 210-25 550 kHz		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
25 550-25 670 kHz	25 550-25 670 kHz		
RADIO ASTRONOMY	RADIO ASTRONOMY		
5.149	5.149		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
25 670-26 100 kHz	25 670-26 100 kHz		
BROADCASTING	BROADCASTING		
26 100-26 175 kHz	26 100-26 175 kHz		
MARITIME MOBILE 5.132	MARITIME MOBILE 5.132		
26 175-27 500 kHz	26 175-27 500 kHz		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	Single Frequency Mobile 26.175 - 27.5 MHz	Includes existing assignments for low power paging in 26.957 - 27.283 MHz and CB radio in 27.185 - 27.275 MHz
		Inductive loop system 26.957 – 27.283 MHz Non-specific SRD's 26.957 – 27.283 MHz Surface model control 26.99 – 27.20 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
5.150	5.150		
27.5-28 MHz	27.5-28 MHz		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
FIXED	FIXED		
MOBILE	MOBILE		
28-29.7 MHz	28-29.7 MHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
29.7-30.005 MHz	29.7-30.005 MHz		
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 29.7 - 29.99 MHz Government 29.99 – 32 MHz	
	Amateur NF 1		
30.005-30.01 MHz	30.005-30.01 MHz		
SPACE OPERATION (satellite identification)			
FIXED			
MOBILE	MOBILE	Government 29.99 – 32 MHz	
SPACE RESEARCH			
30.01-37.5 MHz	30.01-37.5 MHz		
FIXED			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE	MOBILE NF 2	Government 29.99 – 32 MHz	
		Single Frequency Mobile 32 - 32.325 MHz	
		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 Demonstration frequency at 34.7 MHz (paired with 41.15 MHz)
		Model Aircraft Control 35 - 35.5 MHz	Exclusive use by Model Aircraft Control Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Wireless microphones 36.65 – 36.75 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Single Frequency Mobile 33.25 – 33.5 MHz	
		Mobile 3 BTX 35.5 - 36.825 MHz	Paired with 38.5 - 39.825 MHz 36.65 – 36.75 MHz – Wireless Microphones Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Single Frequency Mobile 36.825 - 38.5 MHz	36.85 - 38.45 MHz currently assigned to Government Radio Astronomy at 38.45 MHz (NF 49)
37.5-38.25 MHz	37.5-38.25 MHz		
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 36.825 - 38.5 MHz	36.85 - 38.45 MHz currently assigned to Government
Radio astronomy	Radioastronomy NF 49	Radio Astronomy	
5.149			
38.25-39.986 MHz	38.25-39.986 MHz		
FIXED			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE	MOBILE	Single Frequency Mobile 36.825 - 38.5 MHz	36.85 - 38.45 MHz currently assigned to Government Radio Astronomy at 38.45 MHz
		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 MHz	39.986-40.02 MHz		
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 39.825 - 40.625 MHz	
Space research			
40.02-40.98 MHz	40.02-40.98 MHz		
FIXED			
MOBILE	MOBILE	Single Frequency Mobile 39.825 - 40.625	
		Mobile 2 BTX 40.625 - 41.45	Paired with 34.175 - 35 MHz Low power paging at 40.68 MHz to be migrated (Appendix C refers)
		Wireless microphones 40.65 – 40.7 MHz Non-specific SRD's 40.66 – 40.7 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
	Amateur	Amateur 40.675 – 40.685 MHz	To be used for propagation study (max ERP 10W).
5.150	5.150		40.66 - 40.7 MHz is international ISM band (RR 5.150 refers)
40.98-41.015 MHz	40.98-41.015 MHz		
FIXED			
MOBILE	MOBILE	Mobile 2 BTX 40.625 - 41.45	Paired with 34.175 - 35 MHz 40.675 - 40.685 MHz allocated to Amateur for propagation study (max ERP 10W)

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
Space research			
5.160 5.161			
41.015-44 MHz	41.015-44 MHz		
FIXED			
MOBILE	MOBILE	Mobile 2 BTX 40.625 - 41.45 MHz	Paired with 34.175 - 35 MHz Demonstration frequency at 41.15 MHz (paired with 34.7 MHz)
		Single Frequency Mobile 41.45 - 41.65 MHz	SF assignments due to model control at 35 - 35. 5 MHz
		Mobile 1 BTX 41.65 – 43 MHz	Paired with 32.325 - 33.675 MHz
		Government 43 – 50 MHz	
5.160 5.161			
44-47 MHz	44-47 MHz		
FIXED	FIXED	Meteor Burst 45.3 - 46.9 and 47.5 - 49.1 MHz	Paired with 47.5 – 49.1 MHz
MOBILE	MOBILE NF 3	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 26193, Notice 533 of 24 March 2004 refers...
5.162 5.162A			
47-68 MHz	47-68 MHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
BROADCASTING			
	FIXED (54 – 68 MHz)		
	MOBILE (54 – 68 MHz) NF 3 NF 4	Government 43 – 50 MHz	
		CT0 Cordless Telephones MTX 49.67 - 49.97 MHz	10 frequency pairs assigned to CT0. Paired with 46.61 – 46.97 MHz. Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Wireless microphones 53 – 54 MHz Model Control 54.45 – 54.55 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Single Frequency Mobile 54 - 54.325 MHz	
		Mobile 1 BTX 54.325 - 54.45 MHz	Paired with 59.9 - 60.025 MHz Demonstration frequency at 54.35 MHz to be removed
		Government 54.45 - 55.45 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
		Government 60.025 – 66 MHz	
		Model aircraft control 60.1375 - 60.3750 MHz	To be migrated to 35 - 35.25 MHz by 2005
		66-68 MHz National Emergency Alarm Radio	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		(NEAR)	
		Model Control 60.025 - 60.125 MHz	To be migrated to 35-35.5 MHz by 2005
	AMATEUR	Amateur 50 – 54 MHz	Wireless microphone in 53 - 54 MHz (Government Gazette No 26193, Notice 533 of 24 March 2004 refers.). Low power paging in 53.025 - 53.225 MHz
5.162A 5.163 5.164 5.165 5.169 5.171	5.169 5.171		
68-74.8 MHz	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	Paired with 76.175 - 76.925 MHz
		Mobile 2 BTX 70 - 70.975 MHz	Paired with 75.2 - 76.175 MHz
		Single Frequency Mobile 70.975 - 71.475 MHz	Current assignments to fire fighting
		Mobile 3 BTX 71.475 - 72.525 MHz	Paired with 76.925 - 77.975 MHz
		Single Frequency Mobile 72.525 - 73.425 MHz	
		Mobile 4 BTX 73.425 - 74.8 MHz	Paired with 78.625 - 80 MHz
	Amateur NF5	70 – 70.3 MHz	The channels 70.025 – 70.150 MHz are used for civil defence purposes
	Radio astronomy 73 – 74.6 MHz NF 49		
5.149 5.174 5.175 5.177 5.179	5.149		
74.8-75.2 MHz	74.8-75.2 MHz		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	Instrument Landing System markers 74.80-75.20 MHz	
5.180 5.181	5.180		
75.2-87.5 MHz	75.2-87.5 MHz		
FIXED			
MOBILE except aeronautical	MOBILE except aeronautical	Mobile 2 MTX 75.2 - 76.175 MHz	Paired with 70 - 70.975 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
mobile	mobile NF 7	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 5 BTX 77.975 - 78.625 MHz	Paired with 82.975 - 83.625 MHz
		Mobile 4 MTX 78.625 – 80 MHz	Paired with 73.425 - 74.8 MHz
		Mobile 6 BTX 80 - 80.5 MHz	Paired with 87 - 87.5 MHz Demonstration frequency at 80.15 MHz (paired with 87.15 MHz)
		Single Frequency Mobile 80.5 – 81 MHz	
		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 Demonstration frequency at 87.15 MHz (paired with 80.15 MHz)
5.175 5.179 5.184 5.187			
87.5-100 MHz	**87.5-100 MHz**		
BROADCASTING	BROADCASTING	FM Sound Broadcasting	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
5.190			
100-108 MHz	**100-108 MHz**		
BROADCASTING	BROADCASTING	FM Sound Broadcasting	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
5.192 5.194			
108-117.975 MHz	**108-117.975 MHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	108-112 MHz ILS localiser 112-117.975 MHz VOR (VHF Omni-directional Range)	
5.197 5.197A	5.197A		
117.975-137 MHz	117.975-137 MHz		
AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Voice and Data Communications (117.975-136MHz)	
5.111 5.198 5.199 5.200 5.201 5.202 5.203 5.203A 5.203B	5.111 5.198 5.199 5.200 5.203		
137-137.025 MHz	137-137.025 MHz		
SPACE OPERATION (space-to-Earth)			
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209		
SPACE RESEARCH (space-to-Earth)			
Fixed			
Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)		
5.204 5.205 5.206 5.207 5.208	5.208		
137.025-137.175 MHz	137.025-137.175 MHz		
SPACE OPERATION (space-to-Earth)			
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)			
Fixed			
Mobile-satellite (space-to-Earth) 5.208A 5.209	Mobile-satellite (space-to-Earth) 5.208A 5.209		
Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)		
5.204 5.205 5.206 5.207 5.208			
137.175-137.825 MHz	137.175-137.825 MHz		
SPACE OPERATION (space-to-Earth)			
METEOROLOGICAL-	METEOROLOGICAL-	NOAA meteorological satellite	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
SATELLITE (space-to-Earth)	SATELLITE (space-to-Earth)	137.5 - 137.62 MHz	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209		
SPACE RESEARCH (space-to-Earth)			
Fixed			
Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)		
5.204 5.205 5.206 5.207 5.208	5.208		
137.825-138 MHz	**137.825-138 MHz**		
SPACE OPERATION (space-to-Earth)			
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)			
Fixed			
Mobile-satellite (space-to-Earth) 5.208A 5.209	Mobile-satellite (space-to-Earth) 5.208A 5.209		
Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)		
5.204 5.205 5.206 5.207 5.208	5.208		
138-143.6 MHz	**138-143.6 MHz**		
AERONAUTICAL MOBILE (OR)			
	MOBILE NF 6 NF 7	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
		Alarms 140.5 – 141 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

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Remote control industrial apparatus 141 – 142 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
5.210 5.211 5.212 5.214	5.212		
143.6-143.65 MHz	143.6-143.65 MHz		
AERONAUTICAL MOBILE (OR)			
SPACE RESEARCH (space-to-Earth)	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
5.211 5.212 5.214	5.212		
143.65-144 MHz	143.65-144 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
5.210 5.211 5.212 5.214	5.212		
144-146 MHz	144-146 MHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
5.216			
146-148 MHz	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	148-149.9 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
		Single Frequency Mobile 148.95 - 149.8 MHz	
		Wildlife telemetry Tracking 148 – 152 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
MOBILE-SATELLITE (Earth-to-space) 5.209	MOBILE-SATELLITE (Earth-to-space) 5.209 NF 8	Little LEO's (uplink)	Systems are paired with either 137 – 138 MHz or 400.15 – 401 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.218 5.219 5.221	5.218 5.219 5.221		
149.9-150.05 MHz	149.9-150.05 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A NF 8	Little LEO's (uplink)	Systems are paired with either 137 – 138 MHz or 400.15 – 401 MHz
RADIONAVIGATION-SATELLITE 5.224B	RADIONAVIGATION-SATELLITE 5.224B		
5.220 5.222 5.223	5.220 5.222 5.223		
150.05-153 MHz	150.05-153 MHz		
FIXED			
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile NF 7 NF 9	Paging , Alarms and Load shedding 150.05 – 151 MHz	Channels 150.550 MHz & 150.5625 MHz are used for load shedding. Channels150.625 MHz, 150.650 and 150.675MHz are reserved for in-house paging.
		Government 151 - 152.05 MHz	
		Alarms 152.05 - 152.55 MHz	
		Single Frequency Mobile 152.55 - 153.05 MHz	
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
5.149	5.149		
153-154 MHz	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		
154-156.7625 MHz	154-156.7625 MHz		
FIXED			
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)	Mobile 2 BTX 153.05 – 156 MHz	Paired with 146 - 148.95 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Mobile 3 MTX 156 - 156.7625 MHz	The use of this band by the Maritime services shall be in accordance with ITU Appendix 18.156 - 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 International distress calling (digital selective calling) at 156.525 MHz
5.226 5.227	5.226 5.227		
156.7625-156.8375 MHz	**156.7625-156.8375 MHz**		
MARITIME MOBILE (distress and calling)	MARITIME MOBILE (distress and calling)		International distress, safety and call frequency at 156.8 MHz unchanged
5.111 5.226	5.111 5.226		
156.8375-174 MHz	**156.8375-174 MHz**		
FIXED			
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile NF 10 NF 11	Mobile 3 MTX 156.8375 - 157.95 MHz	The use of this band by the Maritime services shall be in accordance with ITU Appendix 18.156.8375 - 156.875 MHz allocated to SF mobile in inland areas Private maritime MTX at 157.45 - 157.95 MHz paired with 162.05 - 162.55 MHz 156.875 - 157.95 MHz allocated to land mobile MTX in inland areas (paired with 161.475 - 162.55 MHz)

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Mobile 4 BTX 157.95 - 160.6 MHz	Paired with 162.55 - 165.2 MHz
		Mobile 3 BTX 160.6 - 162.55 MHz	The use of this band by the Maritime services shall be in accordance with ITU Appendix 18.160.6 - 160.975 MHz allocated to land mobile BTX in inland areas (paired with 156 - 156.375 MHz) Private maritime BTX at 162.05 - 162.55 MHz paired with 157.45 - 157.95 MHz 161.475 - 162.55 MHz allocated to land mobile BTX in inland areas (paired with 156.875 - 157.95 MHz)
		Mobile 4 MTX 162.55 -165.2 MHz	Paired with 157.95 - 160.6 MHz
		Mobile 5 MTX 165.2 - 169.4 MHz	Paired with 169.8 - 174 MHz
		Single Frequency Mobile 169.4 - 169.8 MHz	
		Mobile 5 BTX 169.8 – 174 MHz	Paired with 165.2 - 169.4 MHz
		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	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
5.226 5.229	5.226		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
174-223 MHz	174-223 MHz		
BROADCASTING	BROADCASTING	Band III TV Broadcast 174 – 238 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
5.235 5.237 5.243			
223-230 MHz	223-230 MHz		
BROADCASTING	BROADCASTING	Band III TV Broadcast 174 – 238 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
Fixed			
Mobile			
5.243 5.246 5.247			
230-235 MHz	230-235 MHz		
FIXED			
MOBILE			
	BROADCASTING	Band III TV Broadcast 174 – 238 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
5.247 5.251 5.252	5.252		
235-267 MHz	235-267 MHz		
	BROADCASTINGNF 12 NF 13	Band III TV Broadcast 174 – 238 MHz Band III TV Broadcast 246 – 254 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
		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
FIXED			
MOBILE	MOBILE NF 13	International Distress Frequency 242.95 – 243.05 MHz (centre at 243 MHz)	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
	NF 14	Public Trunking (MPT 1327) BTX 254 - 259.4 MHz	Paired with 262 – 267.4 MHz
		Government 259.4 – 262 MHz	
		Public Trunking (MPT 1327) MTX 262 - 267.4 MHz	Paired with 254 – 259.4 MHz
5.111 5.199 5.252 5.254 5.256 5.256A	5.111 5.199 5.252 5.254 5.256 5.256A		
267-272 MHz	267-272 MHz		
FIXED			
MOBILE	MOBILE NF 14	Public Trunking (MPT 1327) MTX 262 - 267.4 MHz	Paired with 254 – 259.4 MHz
		Government 267.45 – 380 MHz	
Space operation (space-to-Earth)			
5.254 5.257	5.254 5.257		
272-273 MHz	272-273 MHz		
SPACE OPERATION (space-to-Earth)			
FIXED			
MOBILE	MOBILE	Government 267.45 – 380 MHz	
5.254	5.254		
273-312 MHz	273-312 MHz		
FIXED			
MOBILE	MOBILE NF 15	Government 267.45 – 380 MHz Single Frequency Mobile 278 – 286 MHz	
5.254	5.254		
312-315 MHz	312-315 MHz		
FIXED			
MOBILE	MOBILE	Government 267.45 – 380 MHz	
Mobile-satellite (Earth-to-space) 5.254 5.255			
315-322 MHz	315-322 MHz		
FIXED			
MOBILE	MOBILE	Government 267.45 – 380 MHz	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.254	5.254		
322-328.6 MHz	322-328.6 MHz		
FIXED			
MOBILE	MOBILE	Government 267.45 – 380 MHz	
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
5.149	5.149		
328.6-335.4 MHz	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	335.4-387 MHz		
FIXED	FIXED NF 16	Fixed links (PTP and PTMP) and FWA 336-346 MHz	Paired with 356 – 366 MHz
		Fixed links (PTP and PTMP) and FWA 356-366 MHz	Paired with 336 – 346 MHz
MOBILE	MOBILE NF 17	Digital Trunking (Emergency) 380 – 385 MHz	Paired with 390 – 395 MHz
		Digital Trunking 385 – 390 MHz	Paired with 395 – 399.9 MHz
5.254			
387-390 MHz	387-390 MHz		
FIXED			
MOBILE	MOBILE NF 17	Digital Trunking 385 – 390 MHz	Paired with 395 – 399.9 MHz
Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255			
390-399.9 MHz	390-399.9 MHz		
FIXED			
MOBILE	MOBILE NF 17	Digital Trunking (Emergency) 390 -395MHz	Paired with 380 – 385 MHz
		Digital Trunking 395 -399.9 MHz	Paired with 385 – 390 MHz
5.254			
399.9-400.05 MHz	399.9-400.05 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260	RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260		
5.220			
400.05-400.15 MHz	**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	**400.15-401 MHz**		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209	MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209	Little LEO's (downlink) 400.15 – 401 MHz	Paired 148 – 149.9 MHz
SPACE RESEARCH (space-to-Earth) 5.263			
Space operation (space-to-Earth)			
5.262 5.264	5.264		
401-402 MHz	**401-402 MHz**		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Meteorological Aids (Radiosondes)	
SPACE OPERATION (space-to-Earth)			
EARTH EXPLORATION-SATELLITE (Earth-to-space)			
METEOROLOGICAL-SATELLITE (Earth-to-space)			
Fixed			
Mobile except aeronautical mobile			
402-403 MHz	**402-403 MHz**		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Meteorological Aids (Radiosondes)	
EARTH EXPLORATION-SATELLITE (Earth-to-space)			
METEOROLOGICAL-SATELLITE (Earth-to-			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
space)			
Fixed			
Mobile except aeronautical mobile		Medical Implants 402 – 405 MHz Various SRD's 402 – 406 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers.
403-406 MHz	403-406 MHz		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	Meteorological Aids (Radiosondes)	
Fixed			
Mobile except aeronautical mobile		Low Power Devices 402 – 406 MHz	Notice 533 of 24 March 2004 refers
406-406.1 MHz	406-406.1 MHz		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	Emergency Position Indicating Radio Beacon (EPIRB)	Cospas-Sarsat
5.266 5.267	5.266 5.267		
406.1-410 MHz	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 except aeronautical mobile	MOBILE except aeronautical mobile NF 18 NF 19 NF 20	Mobile MTX 406.1 - 407.625 MHz	Paired with 416.1 – 417.625 MHz
		Mobile MTX 407.625 – 413 MHz	Paired with 417.625 - 423 MHz Allocation for Government / public protection and disaster relief (PPDR)
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
5.149	5.149		
410-420 MHz	410-420 MHz		
FIXED	FIXED	FWA in rural areas 415 - 417.2 MHz	Paired with 425 - 427.2 MHz
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile NF 18 NF 19 NF 20 NF 21	Mobile MTX 407.625 – 413 MHz	Paired with 417.625 - 423 MHz Allocation for Government / public protection and disaster relief (PPDR)
		Mobile Data MTX 413 - 413.7625 MHz	Paired with 423 - 423.7625 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Public Trunking MTX 413.7625 - 416.1 MHz	Paired with 423.7625 - 426.1 MHz
		Mobile BTX 416.1 – 417.625 MHz	Paired with 406.1 - 407.625 MHz
		Mobile BTX 417.625 – 423 MHz	Paired with 407.625 - 413 MHz Allocation for Government / public protection and disaster relieve
SPACE RESEARCH (space-to-space) 5.268			
420-430 MHz	420-430 MHz		
FIXED	FIXED	FWA in rural areas 425 - 427.2 MHz	Paired with 415 - 417.2 MHz
		Single Frequency Links 427.625 – 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 NF 18 NF 20 NF 21	Trunked Mobile BTX 420 – 423 MHz	Paired with 410 - 413 MHz Trunked mobile radio for Government / PPDR
		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
		Single Frequency Mobile 426.1 - 427.625 MHz	
Radiolocation			
5.269 5.270 5.271			
430-432 MHz	430-432 MHz		
AMATEUR	AMATEUR NF 23	Amateur 430 – 440 MHz	
RADIOLOCATION			
5.271 5.272 5.273 5.274 5.275 5.276 5.277			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
432-438 MHz	432-438 MHz		
AMATEUR	AMATEUR NF 23	Amateur 430 – 440 MHz	
	Amateur Satellite NF 23	Amateur-Satellite 435 – 438 MHz	Subject to conditions in RR 5.282
	Mobile	Non-specific SRD's 433.05 – 434.79 MHz	Notice 533 of 4 March 2004 refers.
RADIOLOCATION			
Earth exploration-satellite (active) 5.279A			
5.138 5.271 5.272 5.276 5.277 5.280 5.281 5.282			
438-440 MHz	438-440 MHz		
AMATEUR	AMATEUR NF 23	Amateur 430 – 440 MHz	
RADIOLOCATION			
5.271 5.273 5.274 5.275 5.276 5.277 5.283	5.138 NF 23		
440-450 MHz	440-450 MHz		
FIXED	FIXED NF 18 NF 24	Telemetry / Data BTX 440 – 441 MHz	Paired with 445 - 446 MHz Channels 440.275 MHz and 440.2875 MHz are roving simplex channels. Channels 440.0125 MHz and 440.3625 MHz are used for Agricultural Telemetry.
		Telemetry / Data MTX 445 – 446 MHz	Paired with 440 - 441 MHz Channels 445.275 MHz and 445.2875 MHz are roving simplex channels. Channels 445.3625 MHz and 445.0125 MHz are used for Agriculture Telemetry.
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile NF 24	Single Frequency Mobile 441 – 441.1 MHz	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Mobile BTX 441.1 – 445 MHz	Paired with 446.1 - 450 MHz
		Mobile: PMR 446 446 - 446.1MHz	8 channels : 446.00625 MHz, 446.01875 MHz, 446.03125 MHz, 446.04375 MHz, 446.05625 MHz, 446.06875 MHz, 446.08125 MHz, 446.09375 MHz
		Mobile MTX 446.1 – 450 MHz	Paired with 441.1 - 445 MHz
Radiolocation			
5.269 5.270 5.271 5.284 5.285 5.286	5.286		
450-455 MHz	450-455 MHz		
FIXED	FIXED NF 18 NF 25	Fixed Links 450 – 453 MHz	Paired with 460 - 463 MHz
MOBILE	MOBILE NF 25	Single Frequency Mobile 453.025 - 453.975 MHz	
		Paging 453.975 - 454.425 MHz	
		Trunked Mobile MTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz
5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	5.209 5.286 5.286A		
455-456 MHz	455-456 MHz		
FIXED	FIXED NF 18	FWA in rural areas 455 – 460 MHz	Paired with 465 – 470 MHz
MOBILE	MOBILE NF 25	Trunked Mobile MTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz
5.209 5.271 5.286A 5.286B 5.286C 5.286E	5.209 5.286A		
456-459 MHz	456-459 MHz		
FIXED	FIXED	FWA in rural areas	Paired with 465 – 470 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
	NF 18	455 – 460 MHz	
MOBILE	MOBILE NF 25	Trunked Mobile MTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz
5.271 5.287 5.288	5.287		
459-460 MHz	459-460 MHz		
FIXED	FIXED NF 18	FWA in rural areas 455 – 460 MHz	Paired with 465 - 470 MHz
MOBILE	MOBILE NF 25	Trunked Mobile MTX 454.425 – 460 MHz	Paired with 464.425 - 470 MHz On-board ship communications
5.209 5.271 5.286A 5.286B 5.286C 5.286E	5.209 5.286A		
460-470 MHz	460-470 MHz		
FIXED	FIXED NF 18 NF 25	Fixed Links 460 – 463 MHz	Paired with 450 - 453 MHz
		FWA in rural areas 465 – 470 MHz	Paired with 455 – 460 MHz
MOBILE	MOBILE NF 25	Single Frequency Mobile 463.025 - 463.975 MHz	
		Low Power Mobile Radio 463.975 - 464.425 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers. 464.375 - 464.425 MHz to be dedicated for control of hazardous equipment.
		Trunked Mobile BTX 464.425 – 470 MHz	Paired with 454.425 - 460 MHz
Meteorological-Satellite (space-to-Earth)			
5.287 5.288 5.289 5.290	5.287 5.289		
470-790 MHz	470-790 MHz		
BROADCASTING	BROADCASTING NF 26	UHF TV Broadcasting (Analogue) 470 – 854 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
	RADIO ASTRONOMY NF 49	Radio astronomy 608 -614 MHz	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311 5.312	5.149 5.304 5.311		
790-862 MHz	790-862 MHz		
FIXED	FIXED (854-862 MHz) NF 27 NF 28	Fixed links 856 - 864.1 MHz	
BROADCASTING	BROADCASTING (470-854 MHz) NF 26 NF 27	UHF TV Broadcasting 470 – 854 MHz	The use of these frequency bands is determined in terms of sections 29 and 31 of the IBA Act, Act 153 of 1993, as amended
5.312 5.314 5.315 5.316 5.319 5.321			
862-890 MHz	862-890 MHz		
FIXED	FIXED NF 28 NF 30	Fixed Links 868.1 - 876 MHz	Link Frequencies will be assigned or retained in this band only where migration would be impractical.
MOBILE except aeronautical mobile 5.317A	MOBILE except aeronautical mobile 5.317A NF 29 NF 30 NF 31	Wireless Audio systems/wireless microphones 863 – 865 MHz Non-specific SRD 868 – 868.6 MHz, 868.7 – 869.2 MHz, 869.4 – 869.65 MHz, 869.7 – 870.0 MHz Alarms 868.6 – 868.7 MHz, 869.25 – 869.3 MHz, 869.65 – 869.7 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers.
		CT2 Cordless telephones 864.1 - 868.1 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers.
		Trunked Mobile MTX 876 - 880 MHz	Paired with 921-925 MHz Reserved for use for digital Trunked radio services
		E-GSM Cellular MTX 880 - 890 MHz	Paired with 925-935 MHz
BROADCASTING 5.322			
5.319 5.323			
890-942 MHz	890-942 MHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED NF 30		
MOBILE except aeronautical mobile 5.317A	MOBILE except aeronautical mobile 5.317A NF 31 NF 32 NF 33 NF 34 NF 35	GSM Cellular MTX 890 - 915 MHz	Paired with 935 - 960 MHz
		Low Power Devices 915 MHz ± 0.0015% Vehicle location systems 915.025 – 915.2 MHz Radio tagging systems 915.2 - 915.4 MHz Radio Frequency identification Systems (RFID) 915.4 - 921 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers.
		Trunked Mobile BTX 921 – 925 MHz	Paired with 876 - 880 MHz Reserved for use for digital Trunked mobile radio services
		E-GSM Cellular BTX 925 – 935 MHz	Paired with 880 - 890 MHz
		GSM Cellular BTX 935 – 960 MHz	Paired with 890 - 915 MHz
BROADCASTING 5.322			
Radiolocation			
5.323			
942-960 MHz	942-960 MHz		
FIXED	FIXED NF 30		
MOBILE except aeronautical mobile 5.317A	MOBILE except aeronautical mobile 5.317A NF 33	GSM Cellular BTX 935 – 960 MHz	Paired with 890 - 915 MHz
BROADCASTING 5.322			
5.323			
960-1 164 MHz	960-1 164 MHz		
AERONAUTICAL RADIONAVIGATION 5.328	AERONAUTICAL RADIONAVIGATION 5.328	Distance Measuring Equipment / Secondary Surveillance Radar	
1164-1 215 MHz	1164-1215 MHz		
AERONAUTICAL RADIONAVIGATION 5.328			
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B		Reserved for future GNSS Galileo GPS system (1164 – 1215 MHz)

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.328A	5.328A		
1 215-1 240 MHz	**1 215-1 240 MHz**		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B	GPS L2 1215 – 1260 MHz	
SPACE RESEARCH (active)			
5.330 5.331 5.332	5.332		
1 240-1 300 MHz	**1 240-1 300 MHz**		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION	RADIOLOCATION	Air Traffic Control Radar 1240 – 1350 MHz	
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A 5.328B			
SPACE RESEARCH (active)			
Amateur	Amateur	Amateur 1240 – 1300 MHz	
5.282 5.330 5.331 5.332 5.335 5.335A	5.332 5.282 5.335		
1 300-1 350 MHz	**1 300-1 350 MHz**		
AERONAUTICAL RADIONAVIGATION 5.337	AERONAUTICAL RADIONAVIGATION 5.337		
RADIOLOCATION	RADIOLOCATION	Air Traffic Control Radar 1240 – 1350 MHz	
RADIONAVIGATION SATELLITE (Earth-to-space)			
	Radio astronomy NF 49		
5.149 5.337A	5.149 5.337A		
1 350-1 400 MHz	**1 350-1 400 MHz**		
FIXED	FIXED NF 36	Fixed links 1350 – 1375 MHz	Paired with 1492 - 1517 MHz. CEPT T/R 13-01 Annex A refers.

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		Fixed links 1375 – 1400 MHz	Paired with 1427 - 1452 MHz. CEPT T/R 13-01 Annex B refers.
MOBILE	Radio astronomy NF 49		
RADIOLOCATION			
5.149 5.338 5.339 5.339A	5.149 5.339 5.339A		
1 400-1 427 MHz	1 400-1 427 MHz		
EARTH EXPLORATION-SATELLITE (passive)			
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
SPACE RESEARCH (passive)			
5.340 5.341	5.340		
1 427-1 429 MHz	1 427-1 429 MHz		
SPACE OPERATION (Earth-to-space)			
FIXED	FIXED NF 36 NF 37 NF 38	Fixed links 1427 – 1452 MHz	Paired with 1375 - 1400 MHz. CEPT T/R 13-01 Annex B refers.
MOBILE except aeronautical mobile			
5.341			
1 429-1 452 MHz	1 429-1 452 MHz		
FIXED	FIXED NF 36 NF 37 NF 38	Fixed links 1427 – 1452 MHz	Paired with 1375 - 1400 MHz. CEPT T/R 13-01 Annex B refers.
		FWA on a shared basis 1429 - 1465 MHz	Paired with 1477 – 1513 MHz
MOBILE except aeronautical mobile			
5.341 5.342			
1 452-1 492 MHz	1 452-1 492 MHz		
FIXED	FIXED NF 37	FWA on a shared basis 1429 - 1465 MHz	Paired with 1477 – 1513 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		FWA on a shared basis 1477 – 1513 MHz	Paired with 1429 - 1465 MHz
MOBILE except aeronautical mobile			
BROADCASTING 5.345 5.347	BROADCASTING 5.345 NF 39	Terrestrial Digital Audio Broadcasting (T-DAB) 1452 -1479.5 MHz	
BROADCASTING SATELLITE 5.345 5.347	BROADCASTING SATELLITE 5.345 NF 39	Satellite Digital Audio Broadcasting (S-DAB) 1479.5 - 1492 MHz	
5.341 5.342	5.341		
1 492-1 518 MHz	**1 492-1 518 MHz**		
FIXED	FIXED NF 36 NF 37 NF 38	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	
MOBILE except aeronautical mobile			
5.341 5.342			
1 518-1 525 MHz	**1 518-1 525 MHz**		
FIXED	FIXED NF 37	Single Frequency Fixed Links 1517 – 1525 MHz	
MOBILE except aeronautical mobile			
MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348C 5.348B			
5.341 5.342	5.341		
1 525-1 530 MHz	**1 525-1 530 MHz**		
SPACE OPERATION (space-to-Earth)			
FIXED	FIXED		
MOBILE-SATELLITE (space-to-Earth) 5.351A			
Earth exploration-satellite			
Mobile except aeronautical mobile 5.349			
5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.354		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
1 530-1 535 MHz	1 530-1 535 MHz		
SPACE OPERATION (space-to-Earth)			
MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A	Mobile satellite (Inmarsat) 1525 – 1559 MHz	Paired with 1626.5 – 1660.5 MHz
Earth exploration-satellite			
Fixed			
Mobile except aeronautical mobile			
5.341 5.342 5.351 5.354	5.341 5.351 5.354		
1 535-1 559 MHz	1 535-1 559 MHz		
MOBILE-SATELLITE (space-to-Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A	Cospas-Sarsat 1544 – 1545 MHz Mobile satellite (Inmarsat) 1525 – 1559 MHz	International use for safety of life applications. Paired with 1626.5 – 1660.5 MHz
5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	5.341 5.351 5.353A 5.354 5.356 5.357 5.357A		
1 559-1 610 MHz	1 559-1 610 MHz		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.328B	RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.328B	GPS L1	No change for GPS in 1559 - 1610 MHz
5.341 5.362B 5.362C 5.363			
1 610-1 610.6 MHz	1 610-1 610.6 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A NF 40	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems.
AERONAUTICAL RADIONAVIGATION			
5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	5.341 5.364 5.366 5.367 5.368 5.371 5.372		
1 610.6-1 613.8 MHz	1 610.6-1 613.8 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A NF 40	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems.

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
AERONAUTICAL			
RADIONAVIGATION			
5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372		
1 613.8-1 626.5 MHz	1 613.8-1 626.5 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A NF 40	MSS 1610 - 1626.5 MHz	Paired with 2483.5 - 2500 MHz for some systems.
AERONAUTICAL RADIONAVIGATION			
Mobile-satellite (space-to-Earth)			
5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	5.341 5.364 5.365 5.366 5.367 5.368 5.371 5.372		
1 626.5-1 660 MHz	1 626.5-1 660 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A	MARITIME 1626.5-1645.5 MHz	GMDSS
		MOBILE 1645.5-1646.5 MHz	
		AERONAUTICAL (R) 1646.5-1656.5 MHz	Paired with 1545 - 1555 MHz
		LAND 1656.5-1660.5 MHz	
5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	5.341 5.351 5.353A 5.354 5.357A 5.374 5.375 5.376		
1 660-1 660.5 MHz	1 660-1 660.5 MHz		
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A	LAND 1656.5-1660.5 MHz	
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
5.149 5.341 5.351 5.354 5.362A 5.376A	5.149 5.341 5.351 5.354 5.376A		
1 660.5-1 668 MHz	1 660.5-1 668MHz		
RADIO ASTRONOMY	RADIO ASTRONOMY. NF49		
SPACE RESEARCH (passive)			
Fixed			
Mobile except aeronautical			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
mobile			
5.149 5.341 5.379 5.379A	5.149 5.379A		
1 668-1 668.4 MHz	**1 668-1 668.4 MHz**		
MOBILE-SATELLITE (Earth-to-space) 5.348C			
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
SPACE RESEARCH (passive)			
Fixed			
Mobile except aeronautical mobile			
5.149 5.341 5.379 5.379A	5.149 5.341 5.379A		
1 668.4-1 670 MHz	**1 668.4-1 670 MHz**		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
FIXED			
MOBILE except aeronautical mobile			
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
MOBILE-SATELLITE (Earth-to-space) 5.348C			
5.149 5.341	5.149 5.341		
1 670-1 675 MHz	**1 670-1 675 MHz**		
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
FIXED			
METEOROLOGICAL-SATELLITE (space-to-Earth)			
MOBILE-SATELLITE (Earth-to-space) 5.348C			
MOBILE 5.380	MOBILE 5.380 NF 41	1670 - 1675 MHz	Band previously earmarked for TFTS (paired with 1800 – 1805 MHz).
5.341 5.379B 5.379D 5.379C 5.379E 5.380A	5.341		
1 675-1 690 MHz	**1 675-1 690 MHz**		
METEOROLOGICAL	METEOROLOGICAL	Radiosondes 1668-1700MHz	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
AIDS	AIDS		
FIXED			
METEOROLOGICAL-SATELLITE (space-to-Earth)			
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.341	5.341		
1 690-1 700 MHz	**1 690-1 700 MHz**		
METEOROLOGICAL AIDS		Radiosondes 1668-1700MHz	
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		Channels 1695.6938; 1695.7250; 1695.7562; 1695.7874; 1691; 1694.5MHz
Fixed			
Mobile except aeronautical mobile			
5.289 5.341 5.382	5.289 5.341		
1 700-1 710 MHz	**1 700-1 710 MHz**		
FIXED			
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile			
5.289 5.341	5.289 5.341		
1 710-1 930 MHz	**1 710-1 930 MHz**		
FIXED	FIXED NF 37 NF 42 NF 43 NF 45	FWA on shared basis 1710 – 1785 MHz	Paired with 1805 – 1880 MHz
		FWA on a shared basis 1805 – 1880 MHz	Paired with 1710 – 1785 MHz
		FWA on a shared basis 1850 – 1900 MHz	Paired with 1930 – 1980 MHz
		FWA exclusive 1880 – 1900 MHz	
		FWA on a shared basis 1900 – 1920 MHz (TDD) 1920 – 1980 MHz (FDD)	FDD band paired with 2110 – 2170 MHz

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE 5.380 5.384A 5.388A	MOBILE 5.380 5.384A 5.388A NF 37 NF 41 NF 42 NF 43 NF 44	GSM 1800 MTX 1710 – 1785 MHz	Paired with 1805 - 1880 MHz. CEPT T/R 22-07 refers.
		Mobile Broadband data applications 1785 – 1800 MHz	
		1800 – 1805 MHz	Band previously earmarked for TFTS (paired with 1670 – 1675 MHz).
		GSM 1800 BTX 1805 – 1880 MHz	Paired with 1710 - 1785 MHz. CEPT T/R 22-07 refers
		FWA 1880 – 1920 MHz	The band 1880 – 1900 MHz is also used for DECT cordless telephones (Government Gazette No 26193, Notice 533 of 24 March 2004 refers.).
		Terrestrial component of UMTS/IMT-2000 1920 – 1980 MHz (FDD) 1900 – 1920 MHz (TDD)	FDD band paired with 2110 – 2170 MHz
	Radio astronomy NF 49		
5.149 5.341 5.385 5.386 5.387 5.388	5.149 5.341 5.385 5.388		
1 930-1 970 MHz	1 930-1 970 MHz		
FIXED	FIXED NF 37	FWA on a shared basis 1930 – 1980 MHz	Paired with 1850-1900 MHz
		FWA on a shared basis 1920 – 1980 MHz	Paired with 2110 – 2170 MHz
MOBILE 5.388A	MOBILE 5.388A NF 37 NF 44	Terrestrial component of UMTS/IMT-2000 1920 – 1980 MHz (FDD)	Paired with 2110 – 2170 MHz
5.388	5.388		
1 970-1 980 MHz	1 970-1 980 MHz		
FIXED	FIXED NF 37	FWA on a shared basis 1930 – 1980 MHz	Paired with 1850-1900 MHz
		FWA on a shared basis	Paired with 2110 – 2170

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
		1920 – 1980 MHz	MHz
MOBILE 5.388A	MOBILE 5.388A NF 44	Terrestrial component of UMTS/IMT-2000 1920 – 1980 MHz (FDD)	Paired with 2110 – 2170 MHz.
5.388	5.388		
1 980-2 010 MHz	1 980-2 010 MHz		
FIXED	FIXED	Fixed links	Paired with 2170 – 2200 MHz Use of this band for FS in line with USA FCC determination
MOBILE			
MOBILE-SATELLITE (Earth-to-space) 5.351A	MOBILE-SATELLITE (Earth-to-space) 5.351A NF 44	Satellite component of UMTS/IMT-2000	Paired with 2170 - 2200 MHz Band also to be used for GMPCS systems
5.388 5.389A 5.389B 5.389F	5.388 5.389A		
2 010-2 025 MHz	2 010-2 025 MHz		
FIXED	FIXED NF 37	FWA on a shared basis 1920 – 1980 MHz	Paired with 2110 – 2170 MHz
MOBILE 5.388A	MOBILE 5.388A NF 44	Terrestrial component of UMTS/IMT-2000 2110 – 2170 MHz (FDD)	Paired with 1920 – 1980 MHz
5.388	5.388		
2 025-2 110 MHz	2 025-2 110 MHz		
SPACE OPERATION (Earth-to-space) (space-to-space)			
EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space)			
FIXED	FIXED NF 46	Fixed Links 2025 - 2110 MHz	Paired with 2200 - 2285 MHz. ITU-R F.1098 and CEPT T/R 13-01 Annex C refer.
MOBILE 5.391			
SPACE RESEARCH (Earth-to-space) (space-to-space)			
5.392	5.392		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
2 110-2 120 MHz	2 110-2 120 MHz		
FIXED	FIXED NF 37	FWA on shared basis 2110 – 2170 MHz	Paired with 1920 – 1980 MHz
MOBILE 5.388A	MOBILE 5.388A NF 44	Terrestrial component of UMTS/IMT-2000 2110 – 2170 MHz (FDD)	Paired with 1920 – 1980 MHz
SPACE RESEARCH (deep space) (Earth-to-space)			
5.388	5.388		
2 120-2 160 MHz	2 120-2 160 MHz		
FIXED	FIXED NF 37	FWA on shared basis 2110 – 2170 MHz	Paired with 1920 – 1980 MHz
MOBILE 5.388A	MOBILE 5.388A NF 44	Terrestrial component of UMTS/IMT-2000 2110 – 2170 MHz (FDD)	Paired with 1920 – 1980 MHz
5.388	5.388		
2 160-2 170 MHz	2 160-2 170 MHz		
FIXED	FIXED NF 37	FWA on shared basis 2110 – 2170 MHz	Paired with 1920 – 1980 MHz
MOBILE 5.388A	MOBILE 5.388A NF 44	Terrestrial component UMTS/IMT-2000 2110 – 2170 MHz (FDD)	Paired with 1920 – 1980 MHz
5.388 5.392A	5.388		
2 170-2 200 MHz	2 170-2 200 MHz		
FIXED	FIXED	Fixed links	Paired with 2170 – 2200 MHz Use of this band for FS in line with USA FCC determination
MOBILE			
MOBILE-SATELLITE (space-to-Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A NF 44	Satellite component of UMTS/IMT-2000	Paired with 1980 - 2010 MHz Band also to be used for GMPCS systems
5.388 5.389A 5.389F 5.392A	5.388 5.389A		
2 200-2 290 MHz	2 200-2 290 MHz		
SPACE OPERATION (space-to-Earth) (space-to-space)			
EARTH EXPLORATION-			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
SATELLITE (space-to-Earth) (space-to-space)			
FIXED	FIXED NF 46	Fixed Links 2200 – 2285 MHz	Paired with 2025 - 2110, ITU-R F.1098 and CEPT T/R 13-01 Annex C refer.
		FWA 2285 – 2290 MHz	
MOBILE 5.391			
SPACE RESEARCH (space-to-Earth) (space-to-space)			
5.392	5.392		
2 290-2 300 MHz	2 290-2 300 MHz		
FIXED	FIXED	Fixed links	
MOBILE except aeronautical mobile			
SPACE RESEARCH (deep space) (space-to-Earth)			
2 300-2 450 MHz	2 300-2 450 MHz		
FIXED	FIXED NF 47	Fixed Links (PTMP and PTP) 2307 – 2387 MHz	Paired with 2401 – 2481 MHz
		Fixed Links (PTMP and PTP) 2401 – 2481 MHz	Paired with 2307 – 2387 MHz
		Fixed links 2300 – 2500 MHz	On a licensed and co-ordinated basis
		OB links Primary basis: 2377 MHz and 2471 MHz Secondary basis: 2231 MHz, 2349 MHz, 2415 MHz and 2433 MHz	28 MHz OB links. Frequency co-ordination with fixed links on a case-by-case basis is mandatory for all OB links.
MOBILE		WLAN 2400 – 2483.5 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Non-specific SRD's, FDDA and low power video surveillance 2400 – 2483.5 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
Amateur			
Radiolocation			
5.150 5.282 5.395	5.150	ISM 2400 – 2500 MHz	International ISM band for Industrial, scientific and medical equipment (5.150 refers).
2 450-2 483.5 MHz	2 450-2 483.5 MHz		
FIXED	FIXED	Fixed links (PTMP and PTP) 2401 – 2481 MHz	Paired with 2307 – 2387 MHz
		Fixed links 2300 – 2500 MHz	On a licensed and co-ordinated basis
		OB links 2471 MHz (Primary basis)	28 MHz OB link. Frequency co-ordination with fixed links on a case-by-case basis is mandatory for all OB links.
MOBILE		WLAN 2400 – 2483.5 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
		Non-specific SRD's, FDDA and low power video surveillance 2400 – 2483.5 MHz	Government Gazette No 26193, Notice 533 of 224 March 2004 refers..
Radiolocation			
5.150 5.397	5.150	ISM 2400 – 2500 MHz	International ISM band for industrial, scientific and medical equipment (5.150 refers)
2 483.5-2 500 MHz	2 483.5-2 500 MHz		
FIXED	FIXED	Fixed links 2300 – 2500 MHz	On a licensed and co-ordinated basis
MOBILE			
MOBILE-SATELLITE (space-to-Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A NF 40	MSS 2483.5 – 2500 MHz	Some systems are paired with 1610 - 1626.5 MHz).
Radiolocation			
5.150 5.371 5.397 5.398 5.399 5.400 5.402	5.150 5.371 5.402	ISM 2400 – 2500 MHz	International ISM band for industrial, scientific and medical equipment (5.150 refers)
2 500-2 520 MHz	2 500-2 520 MHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED 5.409 5.410 5.411	FIXED 5.409 5.410 5.411 NF 48	Broadband FWA (TDD). 2500-2557 MHz	
MOBILE except aeronautical mobile 5.384A			
MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403			Potential future use: satellite component for UMTS/IMT-2000 2500 – 2520 MHz
5.405 5.407 5.412 5.414	5.414		
2 520-2 655 MHz	2 520-2 655 MHz		
FIXED 5.409 5.410 5.411	FIXED 5.409 5.410 5.411 NF 48	Broadband FWA (TDD). 2500-2557 MHz	
		Fixed links (PTMP and PTP) 2557 - 2593 MHz	Paired with2631 – 2667MHz as per- CEPT T/R 13-01 Annex D.
MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A NF 48	Mobile data 2593 -2631 MHz (TDD)	Potential future use: terrestrial component for UMTS/IMT-2000 2520 – 2670 MHz
BROADCASTING-SATELLITE 5.413 5.416			
5.339 5.403 5.405 5.412 5.418 5.418B 5.418C	5.339 5.403 5.418B 5.418C		
2 655-2 670 MHz	2 655-2 670 MHz		
FIXED 5.409 5.410 5.411	FIXED 5.409 5.410 5.411 NF 48	Fixed links (PTMP and PTP) 2631 - 2667 MHz	Paired with 2557 – 2593 MHz as per CEPT T/R 13-01 Annex D
MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A NF 48	Mobile data 2593 -2631 MHz (TDD) Mobile data 2667 -2686 MHz (TDD)	Potential future use: terrestrial component for UMTS/IMT-2000 2520 – 2670 MHz
BROADCASTING-SATELLITE 5.413 5.416			
Earth exploration-satellite (passive)			
Radio astronomy	Radio astronomy		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
	NF 49		
Space research (passive)			
5.149 5.412 5.420	5.149 5.420		
2 670-2 690 MHz	**2 670-2 690 MHz**		
FIXED 5.409 5.410 5.411	FIXED 5.409 5.410 5.411 NF 48		
MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A	Mobile data 2667 -2686 MHz (TDD)	Potential future use: terrestrial component for UMTS/IMT-2000 2520 – 2670 MHz
MOBILE-SATELLITE (Earth-to-space) 5.351			Potential future use: satellite component for UMTS/IMT-2000 2670 – 2690 MHz
Earth exploration-satellite (passive)			
Radio astronomy	Radio astronomy NF 49		
Space research (passive)			
5.149 5.412 5.419 5.420	5.149 5.419 5.420		
2 690-2 700 MHz	**2 690-2 700 MHz**		
EARTH EXPLORATION-SATELLITE (passive)			
RADIO ASTRONOMY	RADIO ASTRONOMY NF 49		
SPACE RESEARCH (passive)			
5.340 5.421 5.422			
2 700-2 900 MHz	**2 700-2 900 MHz**		
AERONAUTICAL RADIONAVIGATION 5.337	AERONAUTICAL RADIONAVIGATION 5.337		
Radiolocation			
5.423 5.424	5.423		
2 900-3 100 MHz	**2 900-3 100 MHz**		
RADIONAVIGATION 5.426	AERONAUTICAL RADIONAVIGATION 2700 – 3000 MHz		
RADIOLOCATION			
5.425 5.424A 5.427	5.425 5.424A 5.427		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
3 100-3 300 MHz	**3 100-3 300 MHz**		
RADIOLOCATION	RADIOLOCATION	GOVERNMENT	
Earth exploration-satellite (active)			
Space research (active)			
5.149 5.428	5.149		
3 300-3 400 MHz	**3 300-3 400 MHz**		
RADIOLOCATION	RADIOLOCATION	GOVERNMENT RADIOLOCATION	
5.149 5.429 5.430	5.149		
3 400-3 600 MHz	**3 400-3 600 MHz**		
FIXED	FIXED	FIXED WIRELESS ACCESS	
FIXED-SATELLITE (space-to-Earth)			
Mobile			
Radiolocation			
5.431	NF 50		
3 600-4 200 MHz	**3 600-4 200 MHz**		
FIXED	FIXED	PTP Links	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	VSAT/SNG/Satellite PTP links	
Mobile			
	NF 51 & 55		
4 200-4 400 MHz	**4 200-4 400 MHz**		
AERONAUTICAL-RADIONAVIGATION 5.438	AERONAUTICAL RADIONAVIGATION	RADIO ALTIMETERS	
5.439 5.440	5.440		
4 400-4 500 MHz	**4 400-4 500 MHz**		
FIXED	FIXED	OB/ENG	
MOBILE			
	NF 52		
4 500-4 800 MHz	**4 500-4 800 MHz**		
FIXED	FIXED	GOVERNMENT UTILIZATION	
FIXED-SATELLITE (space-to-Earth) 5.441			
MOBILE	MOBILE		
	NF 52		
4 800-4 990 MHz	**4 800-4 990 MHz**		
FIXED	FIXED	GOVERNMENT UTILIZATION	
MOBILE 5.442	MOBILE 5.442		
Radio Astronomy	Radio Astronomy NF49	Radio Astronomy (4825 - 4835 & 4950 - 4990 MHz)	
5.149 5.339 5.443	NF 52 NF 49		
4 990-5 000 MHz	**4 990-5 000 MHz**		
FIXED	FIXED	GOVERNMENT UTILIZATION	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE except aeronautical mobile			
RADIO ASTRONOMY	RADIO ASTRONOMY NF49	RADIO ASTRONOMY (4990 - 5000 MHz)	
Space Research (passive)	NF 52		
5.149	5.149		
5 000-5 010 MHz	**5 000-5 010 MHz**		
AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)			
5.367	5.367		
5 010-5 030 MHz	**5 010-5 030 MHz**		
AERONAUTICAL RADIONAVIGATION			
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space			
5.443B 5.367			
5 030-5 150 MHz	**5 030-5 150 MHz**		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	MICROWAVE LANDING SYSTEMS (5030-5091 MHz)	
5.367 5.444 5.444A	FIXED-SATELLITE SERVICE (Earth-to-space)	NGSO MSS feeder links (5091 - 5150 MHz)	FSS operates in this band through footnote
5 150-5 250 MHz	**5 150-5 250 MHz**		
AERONAUTICAL RADIONAVIGATION			
FIXED-SATELLITE SERVICE (Earth-to-space) 5.447A	FIXED-SATELLITE SERVICE (Earth-to-space)	NGSO MSS feeder links	
MOBILE except aeronautical mobile 5.446A 5.446B	MOBILE except aeronautical mobile 5.446A 5.446B		WAS/RLAN's(future)
5.446 5.447 5.447B 5.447C	NF 53		
5 250-5 255 MHz	**5 250-5 255 MHz**		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION			
SPACE RESEARCH 5.447D	SPACE RESEARCH 5.447D		
MOBILE except aeronautical mobile 5.446A 5.447E 5.447F	MOBILE except aeronautical mobile 5.446A 5.447E 5.447F		WAS/RLAN's(future)

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.448 5.448A	NF 53		
5 255-5 350 MHz	**5 255-5 350 MHz**		
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION		
MOBILE except aeronautical mobile 5.446A 5.447F	MOBILE except aeronautical mobile 5.446A 5.447F		WAS/RLAN's(future)
SPACE RESEARCH (active)	SPACE RESEARCH (active) 5.447E 5.448 5.448A		
5.447E 5.448 5.448A	NF 53		
5 350-5 460 MHz	**5 350-5 460 MHz**		
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		
5 460-5 470 MHz	**5 460-5 470 MHz**		
RADIONAVIGATION 5.449	RADIONAVIGATION 5.449		
EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D	EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D		
5.448B	5.448B		
5 470-5 570 MHz	**5 470-5 570 MHz**		
MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION		
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A		
EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION ADD 5.450B	EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION ADD 5.450B		
5.450 5.451 5.452 5.448B	5.450 5.451 5.452 5.448B		
5 570-5 650 MHz	**5 570-5 650 MHz**		
MARITIME-RADIONAVIGATION	MARITIME-RADIONAVIGATION	SHIPBORNE AND ASSOCIATED RADARS	
MOBILE except aeronautical mobile 5.446A 5.450A			WAS/RLAN's(future))
RADIOLOCATION 5.450B		Ground-based metrological radars 5600 – 5650 MHz	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.450 5.451 5.452	NF 53		
5 650-5 725 MHz	**5 650-5 725 MHz**		
RADIOLOCATION			
MOBILE except aeronautical mobile 5.446A 5.450A	MOBILE except aeronautical mobile 5.446A 5.450A		WAS/RLAN's(future)
Amateur			
Space Research (deep space)			
5.282 5.451 5.453 5.454 5.455	NF 53		
5 725-5 830 MHz	**5 725-5 830 MHz**		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
5.150 5.451 5.453 5.455 5.456	NF 54	ISM (5725 - 5875 MHz) PTP/PTMP wireless LAN	(TICS 5795 - 5805 MHz) (future)
	5.150 5.451 5.453 5.455 5.456		
5 830-5 850 MHz	**5 830-5 850 MHz**		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Amateur-satellite (space-to-Earth)	Amateur-satellite (space-to-Earth) .150 5.451 5.453 5.455 5.456		
5.150 5.451 5.453 5.455 5.456	NF 54	ISM (5725 - 5875 MHz) PTP/PTMP wireless LAN	
5 850-5 925 MHz	**5 850-5 925 MHz**		
FIXED	FIXED	PTP links/OB ENG	
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	VSAT/SNG/Satellite PTP links	
MOBILE	mobile		
5.150	NF 54, 55, & 56 5.150	ISM (5725 - 5875 MHz) PTP/PTMP wireless LAN	
5 925-6 700 MHz	**5 925-6 700 MHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B	VSAT/SNG/FSS feeder links	
MOBILE			
5.149 5.440 5.458	NF 55 & 56		
6 700-7 075 MHz	**6 700-7 075 MHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441	S-DAB feeder links (uplinks) NGSO MSS feeder links (downlinks)	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE			
5.458 5.458A 5.458B 5.458C	NF 56		
7 075-7 145 MHz	**7 075-7 145 MHz**		
FIXED	FIXED	PTP links/OB ENG	
MOBILE			
5.458 5.459	5.458 5.459		
7 145-7 235 MHz	**7 145-7 235 MHz**		
FIXED	FIXED	PTP links/OB ENG	
MOBILE			
SPACE RESEARCH (Earth-to-space) 5.460			
5.458 5.459			
7 235-7 250 MHz	**7 235-7 250 MHz**		
FIXED	FIXED	PTP links/OB ENG	
MOBILE			
5.458	NF 56		
7 250-7 300 MHz	**7 250-7 300 MHz**		
FIXED	FIXED	PTP links/OB ENG	
FIXED-SATELLITE (space-to-Earth)			
MOBILE			
5.461	NF 56		
7 300-7 450 MHz	**7 300-7 450 MHz**		
FIXED	FIXED	PTP links/OB ENG	
FIXED-SATELLITE (space-to-Earth)			
MOBILE except aeronautical mobile	MOBILE		
5.461	NF 56		
7 450-7 550 MHz	**7 450-7 550 MHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth)			
METEOROLOGICAL-SATELLITE (space-to-Earth)			
MOBILE except aeronautical mobile			
5.461A	NF 56		
7 550-7 750 MHz	**7 550-7 750 MHz**		
FIXED	FIXED	PTP links/OB ENG	
FIXED-SATELLITE (space-to-Earth)			
MOBILE except aeronautical mobile			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
	NF 56		
7 750-7 850 MHz	**7 750-7 850 MHz**		
FIXED	FIXED	PTP links	
METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B			METSAT (future)
MOBILE except aeronautical mobile			
	NF 56		
7 850-7 900 MHz	**7 850-7 900 MHz**		
FIXED	FIXED	PTP links	
MOBILE except aeronautical mobile			
	NF 56		
7 900-8 025 MHz	**7 900-8 025 MHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space)			
MOBILE			
5.461	NF 56		
8 025-8 175 MHz	**8 025-8 175 MHz**		
EARTH EXPLORATION-SATELLITE (space-to-Earth)			
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space)			
MOBILE 5.463			
5.462A	NF 56		
8 175-8 215 MHz	**8 175-8 215 MHz**		
EARTH EXPLORATION-SATELLITE (space-to-Earth)			
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space)			
METEOROLOGICAL-SATELLITE (Earth-to-space)			
MOBILE 5.463			
5.462A	NF 56		
8 215-8 400 MHz	**8 215-8 400 MHz**		
EARTH EXPLORATION-SATELLITE (space-to-Earth)			
FIXED	FIXED	PTP links	
FIXED-SATELLITE (Earth-to-space)			
MOBILE 5.463			
5.462A	NF 56		
8 400-8 500 MHz	**8 400-8 500 MHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED	PTP links	
MOBILE except aeronautical mobile			
SPACE RESEARCH (space-to-Earth) 5.465 5.466			
5.467	NF 56		
8 500-8 550 MHz	**8 500-8 550 MHz**		
RADIOLOCATION			
5.468 5.469			
8 550-8 650 MHz	**8 550-8 650 MHz**		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION			
SPACE RESEARCH (active)			
5.468 5.469 5.469A			
8 650-8 750 MHz	**8 650-8 750 MHz**		
RADIOLOCATION			
5.468 5.469			
8 750-8 850 MHz	**8 750-8 850 MHz**		
RADIOLOCATION			
AERONAUTICAL RADIONAVIGATION 5.470			
5.471			
8 850-9 000 MHz	**8 850-8 9000 MHz**		
RADIOLOCATION			
MARITIME RADIONAVIGATION 5.472			
5.473			
9 000-9 200 MHz	**9 000-9 200 MHz**		
AERONAUTICAL-RADIONAVIGATION 5.337	AERONAUTICAL-RADIONAVIGATION	APPROACH RADARS	
Radiolocation			
5.471			
9 200-9 300 MHz	**9 200-9 300 MHz**		
RADIOLOCATION			
MARITIME RADIONAVIGATION 5.472	MARITIME RADIONAVIGATION	HARBOUR RADARS	
5.473 5.474			
9 300-9 500 MHz	**9 300-9 500 MHz**		
RADIONAVIGATION 5.476	RADIONAVIGATION	Shore based radars 9380 – 9440 MHz	
Radiolocation	Radiolocation	FDDA 9200 – 9975 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers
5.427 5.474 5.475			
9 500-9 800 MHz	**9 500-9 800 MHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION	RADIOLOCATION	FDDA 9200 – 9975 MHz	Government Gazette No 26193, Notice 533 of 24 March 2004 refers
RADIONAVIGATION	RADIONAVIGATION	MOVEMENT DETECTION RADARS	
SPACE RESEARCH (active)			
5.476A			
9 800-10 000 MHz	**9 800-10 000 MHz**		
RADIOLOCATION	RADIOLOCATION	MOVEMENT DETECTION (Low Power)	
Fixed			
5.477 5.478 5.479			
10 -10. 45 GHz	**10 -10. 45 GHz**		
FIXED	FIXED		
MOBILE			
RADIOLOCATION	RADIOLOCATION	Motion Sensors	
Amateur			
5.479	NF 57		
10.45-10. 50 GHz	**10.45-10. 50 GHz**		
RADIOLOCATION	RADIOLOCATION	Motion Sensors	
Amateur			
Amateur-Satellite			
5.481			
10.50-10. 55 GHz	**10.50-10. 55 GHz**		
FIXED	FIXED	PTMP	
MOBILE			
Radiolocation	Radiolocation	Motion Sensors	
	NF 57		
10.55-10. 60 GHz	**10.55-10. 60 GHz**		
FIXED	FIXED	PTMP	
MOBILE except aeronautical mobile			
Radiolocation	Radiolocation	Motion Sensors	
	NF 57		
10.60-10. 68 GHz	**10.60-10. 68 GHz**		
EARTH EXPLORATION-SATELLITE (passive)			
FIXED	FIXED	PTP and PTMP 10.5 10.65 GHz	Paired with 10.15 – 10.3 GHz
MOBILE except aeronautical mobile			
RADIO ASTRONOMY			
SPACE RESEARCH (passive)			
Radiolocation	Radiolocation	Motion Sensors	

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.149 5.482	NF 57		
10.68-10. 70 GHz	**10.68-10. 70 GHz**		
EARTH EXPLORATION-SATELLITE (passive)			
RADIO ASTRONOMY			
SPACE RESEARCH (passive)			
5.340 5.483			
10.70-11. 70 GHz	**10.70-11. 70 GHz**		
FIXED	FIXED NF58	PTP links	
FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484	FIXED SATELLITE(space-to-Earth) NF59	VSAT/SNG/DTH (secondary) / BSS feeder links	Government Gazette No. 19343, dated 09 October 1998
MOBILE except aeronautical mobile			
11.70-12. 50 GHz	**11.70-12. 50 GHz**		
FIXED	FIXED	ENG/OB	
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE	BSS feeder links	
MOBILE except aeronautical mobile			
5.487 5.487A 5.492			
12.50-12. 75 GHz	**12.50-12. 75 GHz**		
FIXED-SATELLITE (space-to-Earth) S484A (Earth-to-space)	FIXED SATELLITE (space-to-Earth)	VSAT/SNG/DTH	
5.494 5.495 5.496	NF 59		
12.75-13. 25 GHz	**12.75-13. 25 GHz**		
FIXED	FIXED	PTP links/ENG OB	
FIXED-SATELLITE (Earth-to-space) 5.441			
MOBILE			
Space Research (deep space) (space-to-Earth)			
	NF 60		
13.25-13. 40 GHz	**13.25-13. 40 GHz**		
EARTH EXPLORATION-SATELLITE (active)			
AERONAUTICAL-RADIONAVIGATION 5.497			
SPACE RESEARCH (active)			
5.498A 5.499			
13.40-13. 75 GHz	**13.40-13. 75 GHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION	RADIOLOCATION	Low Power Microwave Fences (13.4 - 14 GHz) NIB, FDDA	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
SPACE RESEARCH 5.501A			
Standard frequency and time signal satellite (Earth-to-space)			
5.499 5.500 5.501 5.501B			
13.75-14. 00 GHz	**13.75-14. 00 GHz**		
FIXED-SATELLITE (Earth-to-space) 5.484A	FIXED SATELLITE (Earth-to-space)	VSAT/SNG/FSS feeder links	
RADIOLOCATION	RADIOLOCATION	Low Power Microwave Fences (13.4 - 14 GHz) NIB, FDDA	Government Gazette No 26193, Notice 533 of 24 March 2004 refers..
Standard frequency and time signal satellite (Earth-to-space)			
Space research			
Earth exploration -satellite			
5.499 5.500 5.501 5.502 5.503			
14.00-14. 25 GHz	**14.00-14. 25 GHz**		
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space)	VSAT/SNG/FSS feeder links	
RADIONAVIGATION 5.504			
Mobile-satellite (Earth-to-space) 5.504C 5.506A			
Space Research			
5.505 5.504A	NF 59		
14.25-14. 30 GHz	**14.25-14. 30 GHz**		
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space)	VSAT/SNG/FSS feeder links	
RADIONAVIGATION 5.504			
Mobile-satellite (Earth-to-space) 5.506A 5.509A			
Space Research			
5.505 5.508 5.509 5.504A	NF 59		
14.30-14. 40 GHz	**14.30-14. 40 GHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space)	VSAT/SNG/FSS feeder links	
MOBILE except aeronautical mobile			
Mobile-satellite (Earth-to-space) except aeronautical mobile satellite 5.506A 5.509A			
Radionavigation-satellite			
5.504A	NF 59		
14.40-14. 47 GHz	**14.40-14. 47 GHz**		
FIXED			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space)	VSAT/SNG/FSS feeder links	
MOBILE except aeronautical mobile			
Mobile-satellite (Earth-to-space) 5.506A 5.509A			
Space Research (space-to-Earth)			
5.504A	NF 59		
14.47-14. 50 GHz	**14.47-14. 50 GHz**		
FIXED			
FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B	FIXED SATELLITE (Earth-to-space)	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	NF 59		
14.50-14. 80 GHz	**14.50-14. 80 GHz**		
FIXED	FIXED	PTP links/ENG OB	
FIXED-SATELLITE (Earth-to-space) 5.510		BSS feeder links	
MOBILE			
Space Research			
	NF 61		
14.80-15. 35 GHz	**14.80-15. 35 GHz**		
FIXED	FIXED	PTP links/ENG OB	
MOBILE			
Space Research			
5.339	NF 61		
15.35-15. 40 GHz	**15.35-15. 40 GHz**		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	VILBIRA OBSERVATIONS	
RADIO ASTRONOMY			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
SPACE RESEARCH (passive)			
5.340 5.511			
15.40-15. 43 GHz	15.40-15. 43 GHz		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIO ALTIMETERS/RADARS	
5.511D			
15.43-15. 63 GHz	15.43-15. 63 GHz		
FIXED-SATELLITE (Earth-to-space) 5.511A			
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIO ALTIMETERS/RADARS	
5.511C			
15.63-15. 70 GHz	15.63-15. 70 GHz		
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIO ALTIMETERS/RADARS	
5.511D			
15.70-16. 60 GHz	15.70-16. 60 GHz		
RADIOLOCATION	RADIOLOCATION	ALTIMETERS / DISTANCE MEASURING EQUIPMENT	
5.512 5.513			
16.60-17. 10 GHz	16.60-17. 10 GHz		
RADIOLOCATION			
Space Research (deep space) (Earth-to-space)			
5.512 5.513			
17.10-17. 20 GHz	17.10-17. 20 GHz		
RADIOLOCATION			
5.512 5.513	NF 53		HIPERLAN (future)
17.20-17. 30 GHz	17.20-17. 30 GHz		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION			
SPACE RESEARCH (active)			
5.512 5.513 5.513A	NF 53		HIPERLAN (future)
17.30-17. 70 GHz	17.30-17. 70 GHz		
FIXED-SATELLITE (Earth-to-space) (space to Earth) 5.516 5.516A 5.516B	FIXED-SATELLITE (Earth-to-space)		
Radiolocation			
5.514			
17.70-18. 10 GHz	17.70-18. 10 GHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516	FIXED-SATELLITE		BSS feeder links (future)
MOBILE	NF 62		
18.10-18. 40 GHz	**18.10-18. 40 GHz**		
FIXED	FIXED	PTP links (17.7 - 19.7 GHz)	
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520	FIXED-SATELLITE	GSO/FSS	
MOBILE			
5.519 5.521	NF 62		
18.40-18. 60 GHz	**18.40-18. 60 GHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	FIXED-SATELLITE	GSO/FSS	
MOBILE			
	NF 62		
18.60-18. 80 GHz	**18.60-18. 80 GHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth) 5.522B	FIXED SATELLITE	GSO/FSS	
MOBILE except aeronautical mobile			
EARTH EXPLORATION-SATELLITE (passive)			
Space research (passive)			
5.522A 5.522C	NF 62		
18.80-19. 30 GHz	**18.80-19. 30 GHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth) 5.523A 5.516B	FIXED-SATELLITE	NGSO/FSS	NGSO FSS (18.8 - 19.3 GHz) (future)
MOBILE			
	NF 62		
19.30-19. 70 GHz	**19.30-19. 70 GHz**		
FIXED	FIXED	PTP links	
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E	FIXED-SATELLITE	NGSO MSS (19.3 - 19.7 GHz)	NGSO/MSS feeder links (future)
MOBILE			
	NF 62		
19.70-20. 10 GHz	**19.70-20. 10 GHz**		
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	FIXED-SATELLITE	GSO/FSS	
Mobile-Satellite (space-to-Earth)			
5.524			
20.10-20. 20 GHz	**20.10-20. 20 GHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B	FIXED-SATELLITE	GSO/FSS	
MOBILE-SATELLITE (space-to-Earth)			
5.524 5.525 5.526 5.527 5.528			
20.20-21. 20 GHz	**20.20-21. 20 GHz**		
FIXED-SATELLITE (space-to-Earth)			
MOBILE-SATELLITE (space-to-Earth)			
Standard frequency and time signal- satellite (space-to-Earth)			
5.524			
21.20-21. 40 GHz	**21.20-21. 40 GHz**		
EARTH EXPLORATION-SATELLITE (passive)			
FIXED	FIXED	PTP links	
MOBILE			
SPACE RESEARCH (passive)			
	NF 63		
21.40-22 GHz	**21.40-22GHz**		
FIXED	FIXED	PTP links	
MOBILE			
BROADCASTING-SATELLITE			HDTV (future)
5.530	NF 63		
22-22.21 GHz	**22-22.21GHz**		
FIXED	FIXED	PTP links	
MOBILE except aeronautical mobile			
5.149	NF 63		
22.21-22.50 GHz	**22.21-22.50GHz**		
EARTH EXPLORATION-SATELLITE (passive)			
FIXED	FIXED	PTP links	
MOBILE except aeronautical mobile			
RADIO ASTRONOMY			
SPACE RESEARCH (passive)			
5.149 5.532	NF 63		
22.50--22.55 GHz	**22.50-22.55GHz**		
FIXED	FIXED	PTP links	
MOBILE			
	NF 63		
22.55--23.55 GHz	**22.55-23.55GHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED	PTP links	
INTER-SATELLITE			
MOBILE			
5.149	NF 63		
23.55–23.60 GHz	23.55-23.60GHz		
FIXED	FIXED	PTP links	
MOBILE			
	NF 63		
23.60–24 GHz	23.60-24GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	5.340		
24–24.05 GHz	24-24.05GHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
5.150	5.150		ISM (24 - 24.25 GHz)
24.05–24.25 GHz	24.05-24.25GHz		
RADIOLOCATION	RADIOLOCATION		
Amateur	Amateur		
Earth exploration-satellite (active)	Earth exploration-satellite (active)		
5.150	5.150		ISM (24 - 24.25 GHz)
24.25–24.45 GHz	24.25-24.45GHz		
FIXED	FIXED		Licensed video surveillance (future) ENG/OB (future)
24.45–24.65 GHz	24.45-24.65GHz		
FIXED	FIXED		Broadband PTP and PTMP systems (future)
INTER-SATELLITE			
	NF 64		
24.65–24.75 GHz	24.65-24.75GHz		
FIXED	FIXED		Broadband PTP and PTMP systems (future)
INTER-SATELLITE			
	NF 64		
24.75–25.25 GHz	24.75-25.25GHz		
FIXED	FIXED		Broadband PTP and PTMP systems (future)
	NF 64		
25.25–25.50 GHz	25.25-25.50 GHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED		Broadband PTP and PTMP systems (future)
INTER-SATELLITE 5.536			
MOBILE			
Standard frequency and time signal- satellite (Earth-to-space)			
	NF 64		
25.50—27 GHz	25.50-27 GHz		
EARTH EXPLORATION – SATELLITE (space-to-Earth) 5.536A 5.536B	EARTH EXPLORATION – SATELLITE (space-to-Earth) 5.536A 5.536B		National Polar-orbiting Operational Environmental Satellite System (NPOESS),[Future]
FIXED	FIXED		Broadband PTP and PTMP systems (future)
INTER-SATELLITE 5.536			
MOBILE			
SPACE RESEARCH (space-to-Earth) 5.536A 5.536C			
Standard frequency and time signal- satellite (Earth-to-space)			
	NF 64		
27—27.5 GHz	27-27.5 GHz		
FIXED	FIXED		
INTER-SATELLITE 5.536			
MOBILE			
27.5—28.5 GHz	27.5-28.5 GHz		
FIXED 5.537A			LMDS (27.5 - 28.35 GHz) (future)
FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B			FSS/BSS feeder links (28.35 - 28.6 GHz) (future)
MOBILE			
5.538 5.540	NF 65		
28.5—29.1 GHz	28.5-29.1 GHz		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 5.516B	FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 5.516B		NGSO FSS (28.6 - 29.1 GHz) (future) and FSS/ BSS feeder links (28.35 - 28.6 GHz) (future)
MOBILE			
Earth exploration-satellite (Earth-to- space) 5.541			
5.540			
29.1—29.5 GHz	29.1-29.5 GHz		
FIXED	FIXED		LMDS (29.1 - 29.25 GHz) (future)
FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A 5.516B	FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A 5.516B		FSS/BSS feeder links (29.25 - 30 GHz) (future)
MOBILE			
Earth exploration-satellite (Earth-to- space) 5.541			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
5.540			
29.5—29.9 GHz	**29.5-29.9 GHz**		
FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B		FSS/BSS feeder links (29.25 - 30 GHz) (future)
Earth exploration-satellite (Earth-to- space) 5.541			
Mobile-satellite (Earth-to-space)			
5.540 5.542			
29.9—30 GHz	**29.9-30 GHz**		
FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 5.516B		FSS/BSS feeder links (29.25 - 30 GHz) (future)
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
Earth exploration-satellite (Earth-to- space) 5.541 5.543			
5.525 5.526 5.527 5.538 5.540 5.542			
30—31 GHz	**30-31 GHz**		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
Standard frequency and time signal - satellite (space-to-Earth)			
5.542			
31—31.3 GHz	**31-31.3 GHz**		
FIXED 5.543A	FIXED	LPVS (31.0 - 31.056 GHz) HAPS (31.1 - 31.3 GHz)	Government Gazette 20087 (Notice 939, 15 May 1999) LPVS expansion in the band 31.056 - 31.3 GHz (future)
MOBILE			
Standard frequency and time signal - satellite (space-to-Earth)			
Space research 5.544 5.545			
5.149			
31.3—31.5 GHz	**31.3-31.5 GHz**		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)			
5.340			
31.5—31.8 GHz	**31.5-31.8 GHz**		
EARTH EXPLORATION-SATELLITE (passive)			
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)			
Fixed	Fixed	HPVS (31.5 - 31.8 GHz)	
Mobile except aeronautical mobile			
5.149 5.546			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
31.8—32 GHz	31.8-32 GHz		
FIXED 5.547A	FIXED 5.547A		HDFS (31.8 - 33.4 GHz) (future)
RADIONAVIGATION	RADIONAVIGATION		
SPACE RESEARCH (deep space) (space-to-Earth)			
5.547 5.547B 5.548			
32—32.3 GHz	32-32.3 GHz		
FIXED 5.547A	FIXED 5.547A		HDFS (31.8 - 33.4 GHz) (future)
RADIONAVIGATION	RADIONAVIGATION		
SPACE RESEARCH (deep space) (space-to-Earth)	SPACE RESEARCH (deep space) (space-to-Earth)		
5.547 5.547C 5.548			
32.3—33 GHz	32.3-33 GHz		
FIXED 5.547A	FIXED 5.547A		HDFS (31.8 - 33.4 GHz) (future)
INTER-SATELLITE	INTER-SATELLITE		
RADIONAVIGATION	RADIONAVIGATION		
5.547 5.547D 5.548	5.547 5.547D 5.548		
33—33.4 GHz	33-33.4 GHz		
FIXED 5.547A	FIXED 5.547A		HDFS (31.8 - 33.4 GHz) (future)
RADIONAVIGATION	RADIONAVIGATION		
5.547 5.547E	5.547 5.547E		
33.4—34.2 GHz	33.4-34.2 GHz		
RADIOLOCATION	RADIOLOCATION		
5.549	5.549		
34.2—34.7 GHz	34.2 -34.7 GHz		
RADIOLOCATION	RADIOLOCATION		
SPACE RESEARCH (deep space) (Earth-to-space)	SPACE RESEARCH (deep space) (Earth-to-space)		
5.549	5.549		
34.7—35.2 GHz	34.7 -35.2 GHz		
RADIOLOCATION	RADIOLOCATION		
Space Research 5.550	Space Research 5.550		
5.549	5.549		
35.2—35.5 GHz	35.2 -35.5 GHz		
METEROLOGICAL AIDS	METEROLOGICAL AIDS		
RADIOLOCATION	RADIOLOCATION		
5.549			
35.5—36 GHz	35.5 -36 GHz		
METEROLOGICAL AIDS	METEROLOGICAL AIDS		
EARTH EXPLORATION-SATELLITE (active)			
RADIOLOCATION			
SPACE RESEARCH (active)			
5.549 5.549A			

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
36—37 GHz	36 -37 GHz		
EARTH EXPLORATION-SATELLITE (passive)	RADIO ASTRONOMY (36.43 - 36.5)		
FIXED			
MOBILE			
SPACE RESEARCH (passive)			
5.149			
37—37.5 GHz	37 -37.5 GHz		
FIXED	FIXED	PTP links	HDFS (37 - 40 GHz)
MOBILE			
SPACE RESEARCH (space-to-Earth)			
5.547	NF 66		
37.5—38 GHz	37.5 -38 GHz		
FIXED	FIXED	PTP links	HDFS (37 - 40 GHz)
FIXED – SATELLITE (space-to-Earth)			
MOBILE			
SPACE RESEARCH (space-to-Earth)			
Earth exploration-satellite (space-to Earth)			
5.547	NF 66		
38—39.5 GHz	38 -39.5 GHz		
FIXED	FIXED	PTP links	HDFS (37 - 40 GHz)
FIXED-SATELLITE (space-to-Earth)			
MOBILE			
Earth exploration-satellite (space-to Earth)			
5.547	NF 66		
39.5—40 GHz	39.5 -40 GHz		
FIXED	FIXED		HDFS (37 - 40 GHz) High Density application in the FSS (39.5 - 40 GHz)
FIXED-SATELLITE (space-to-Earth) 5.516B	FIXED-SATELLITE (space-to-Earth) 5.516B		
MOBILE	MOBILE		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
Earth exploration-satellite (space-to Earth) 5.551AA 5.547	Earth exploration-satellite (space-to Earth) 5.551AA 5.547		
40—40.5 GHz	40 -40.5 GHz		
EARTH EXPLORATION SATELLITE (Earth-to-space)	EARTH EXPLORATION SATELLITE (Earth-to-space)		
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth) 5.516B	FIXED-SATELLITE (space-to-Earth) 5.516B		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
MOBILE	MOBILE		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
SPACE RESEARCH (Earth-to-space)	SPACE RESEARCH (Earth-to-space)		
Earth exploration-satellite (space-to Earth)	Earth exploration-satellite (space-to Earth)		
40.5—41 GHz	40.5 -41 GHz		
FIXED	FIXED		MWS/MVDS (future) HDFS (40.5 - 43.5 GHz) High Density application in the FSS (40.5 - 42 GHz) (future)
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
BROADCASTING	BROADCASTING		
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
Mobile	Mobile		
5.547	5.547		
41—42.5 GHz	41 -42.5 GHz		
FIXED	FIXED		MWS/MVDS (future) HDFS (40.5 - 43.5 GHz)
FIXED-SATELLITE (space-to-Earth) 5.516B	FIXED-SATELLITE (space-to-Earth) 5.516B		BSS feeder links (future)
BROADCASTING			
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE		
Mobile			
5.547 5.551F 5.551H 5.551I			
42.5—43.5 GHz	42.5 -43.5 GHz		
FIXED	FIXED		MWS/MVDS (future) HDFS (40.5 - 43.5 GHz)
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		BSS feeder links (future)
MOBILE except aeronautical mobile			
RADIO ASTRONOMY			
5.149 5.547			
43.5—47 GHz	43.5 -47 GHz		
MOBILE 5.553	MOBILE 5.553		
MOBILE-SATELLITE			
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.554	5.554		
47—47.2 GHz	47 -47.2 GHz		
AMATEUR	AMATEUR		
AMATEUR-SATELLITE	AMATEUR-SATELLITE		
47.2—47.5 GHz	47.2—47.5 GHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE			
5.552A			
47.5—47.9 GHz	**47.5—47.9 GHz**		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A	FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A		
MOBILE			
47.9—48.2 GHz	**47.9—48.2 GHz**		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE			
5.552A			
48.2—48.54 GHz	**48.2—48.54 GHz**		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552(space-to-Earth) 5.516B 5.554A 5.555A	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE			
48.54—49.44 GHz	**48.54—49.44 GHz**		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space) 5.552	FIXED-SATELLITE (Earth-to-space) 5.552		
MOBILE			
5.149 5.340 5.555			
49.44—50.2 GHz	**49.44 -50.2 GHz**		
FIXED	FIXED		HAPS (47.2 - 47.5 & 47.9 - 48.2 GHz(future)
FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555A	FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555A		BSS feeder links (future)
MOBILE	MOBILE		
50.2—50.4 GHz	**50.2 -50.4 GHz**		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340 5.555A	5.340 5.555A		
50.4—51.4 GHz	**50.4 -51.4 GHz**		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE			
Mobile-Satellite (Earth-to-space)	Mobile-Satellite (Earth-to-space)		
51.4—52.6 GHz	51.4 -52.6 GHz		
FIXED	FIXED		HDFS (51.4 - 52.6 GHz) (future)
MOBILE			
5.547 5.556	5.547 5.556		
52.6—54.25 GHz	52.6 -54.25 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340 5.556	5.340 5.556		
54.25—55.78 GHz	54.25 -55.78 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.556B	5.556B		
55.78—56.9 GHz	55.78 -56.9 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED 5.557A	FIXED 5.557A		HDFS (55.78 - 59 GHz) (future)
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
MOBILE 5.558	MOBILE 5.558		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.557	5.547 5.557		
56.9—57 GHz	56.9 -57 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED		HDFS (55.78 - 59 GHz) (future)
INTER-SATELLITE 5.558A	INTER-SATELLITE 5.558A		
MOBILE 5.558	MOBILE 5.558		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.557	5.547 5.557		
57—58.2 GHz	57 -58.2 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED		HDFS (55.78 - 59 GHz) (future)
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
MOBILE 5.558			
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.557	5.547 5.557		
58.2—59 GHz	58.2 -59 GHz		

ITU Region 1 Allocations	South African Allocations	Applications	Notes and Comments
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED		HDFS (55.78 - 59 GHz) (future)
MOBILE			
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.556	5.547 5.556		
59—59.3 GHz	59 -59.3 GHz		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED		
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
MOBILE 5.558			
RADIOLOCATION 5.559	RADIOLOCATION 5.559		
59.3—64 GHz	59.3 -64 GHz		
FIXED			
INTER-SATELLITE			
MOBILE 5.558	MOBILE		TRANSPORTATION APPLICATIONS
RADIOLOCATION 5.559			
5.138			ISM (61 - 61.5 GHz) (future)
64—65 GHz	64 -65 GHz		
FIXED			HDFS (64 - 66 GHz) (future)
INTER-SATELLITE			
MOBILE except aeronautical mobile			
5.547 5.556			
65—66 GHz	65 -66 GHz		
EARTH EXPLORATION-SATELLITE	EARTH EXPLORATION-SATELLITE		
FIXED			
INTER-SATELLITE	INTER-SATELLITE		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
SPACE RESEARCH	SPACE RESEARCH		
5.547	5.547		
66—71 GHz	66 -71 GHz		
INTER-SATELLITE			
MOBILE 5.553 5.558			
MOBILE-SATELLITE			
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
5.554	5.554		

APPENDIX B: SOUTH AFRICAN NATIONAL FOOTNOTES

National Footnotes (NF)

NF 1

29.7 - 30 MHz (extension of amateur band)

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 2

35 - 35.50 MHz (model aircraft control)

The model aircraft control band is moved in line with the European band at 35 - 35.50 MHz.

NF 3

46.61 - 46.97 / 49.67 - 49.97 MHz (CT0 cordless telephones)

CT0 cordless telephones are widely used in South Africa, and their use on the nominated frequencies within these ranges (as specified in Notice 1623 of 2001 published in Government Gazette no. 22443 dated 4 July 2001) should continue. There are now ten (10) radio frequency pairs available for CT0.

NF 4

66 - 68 MHz (block allocation for NEAR)

The band 66 - 68 MHz is allocated to National Emergency Alarm Radio (NEAR). The channel spacing of 12.5 KHz is used.

NF 5

70 - 70.3 MHz (use for amateur service)

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 6

138 - 174 MHz (VHF High band re-planning)

The land mobile sub-bands within the VHF High band are now in line with the rest of ITU Region 1. The sub-band boundaries and Tx/Rx separations are based on those in the European frequency plan.

NF 7

140.5 - 141 and 152.05 - 152.5 MHz (alarms)

These frequency bands are allocated for use by alarm systems. Demand has continued to be primarily for single frequency systems, although a small number of frequency pairs are reserved for dual frequency systems.

NF 8

148 - 149.9 MHz (little LEOs)

This band was allocated internationally at WARC 92 for the mobile satellite systems known as little LEOs. The band is allocated for the Earth-to-space direction, and is extended up to 150.05 MHz for some little LEO systems. The space-to-Earth link is generally provided at either 137 - 138 MHz or 400.15 - 401 MHz, depending on the system.

In South Africa the band 148 - 149.9 MHz (and the other relevant MSS bands also) is allocated to little LEOs, which could provide useful store-and-forward data communications to remote areas of the country. Stations of little LEO's cannot cause or claim interference from other stations in this band. Terrestrial systems will continue to be used in this band on a primary basis.

NF 9

150.05 - 151 MHz (Load shedding and alarm systems)

This band was 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 10

161.875 - 173.875 MHz (sharing of Sonobuoy frequencies)

The Sonobuoy frequencies between 161.875 and 173.875 MHz are currently unavailable for other uses up to a distance of 200 km inland from the coast. It is generally agreed that there should be scope for increased sharing of Sonobuoy frequencies compared with what is allowed at present. The Authority will undertake a separate process to look into ways of relaxing any protection criteria that are found to be excessive.

NF 11

169.4 - 169.8 MHz (SF MOBILE)

This band was earmarked for the paging system called ERMES which was not realised. The Authority has decided to use this band for single frequency (SF) mobile.

NF 12

216 - 246 MHz

The digital Broadcasting will be addressed in the Broadcasting Frequency Plan. T-DAB is temporarily allocated in order to allow field testing of Eureka 147 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.
The term SAB covers the use of radio by established terrestrial broadcasters in the making of their programmes. The term SAP has been introduced to cover the use of radio by independent programme makers and other commercial non broadcast entities to support the activities carried out in the making of "programmes". Programmes include film making, advertisements, corporate videos, sporting events, concerts, theatre and similar activities not initially meant for broadcasting to the general public.

NF 13

246 - 254 MHz (TV channel 13)

Modifications to TV transmitters on channel 13 were done and field measurements conducted. The field measurements proved that no harmful interference can be caused to the Trunking service with the implemented modifications.

NF 14

254 - 259.4 / 262 - 267.4 MHz (public trunking)

This band is currently used by public trunking network operators. It was previously anticipated that the current operators will move to digital trunking after 2008. After assessing the situation the Authority has decided not to set a deadline for such move.

NF 15

278 - 286 MHz

This band was previously proposed for use as one leg of a two-way paging system with the other leg in the band 925 - 925.4 MHz. This band is now allocated to single frequency mobile systems.

NF 16

300 - 380 MHz (20 MHz for Fixed wireless access and fixed links)

Within this frequency range the band 336-346 MHz paired with 356-366 MHz is allocated to fixed services including FWA . This spectrum is potentially very useful for providing telecommunications services to rural areas considering its excellent propagation conditions. Efforts will continue to identify suitable equipment for operation in this band.

NF 17

380 –399.9 MHz (use of government spectrum for digital trunked radio)

This military band has been designated in Europe for use for digital trunked mobile radio (CEPT T/R 22-05), for use by the emergency services. The frequency bands 380-385 MHz paired with 390-395 MHz are allocated to Public Protection and Disaster Relief (PPDR) applications in line with the CEPT decision and ITU Resolution 646 (WRC-03). The frequency bands 385-389.9 MHz paired with 395-399.9 MHz are allocated to digital trunking systems.

NF 18

406.1 - 470 MHz (migration of fixed links)

Certain portions of this frequency range are used for fixed links. Throughout the world there is a strong trend for fixed links to be migrated to higher bands (above 3 GHz where possible), and the band is increasingly being used for mobile services, a purpose to which it is very well suited. For these reasons, a general transition away from fixed links and towards mobile radio is implemented in this band. However, specific conditions in South Africa, such as large rural areas that are very sparsely populated, make the requirement for fixed links over very long hop lengths essential and it is therefore recognised that certain fixed applications will remain in this frequency range (see also NF 25 for details on FS usage). Further details regarding specific sub-bands are given in NF 19 to NF 25.

NF 19

406.1 - 407.625 / 416.1 - 417.625 MHz

This spectrum is currently used by ESKOM for both mobile and fixed applications. The use of these frequencies for fixed links should be minimised as far as possible, by migration of links to higher frequencies where practical. Mobile usage of the band by ESKOM will continue. The band 426.1 - 427.625MHz is now allocated to single frequency mobile applications.

NF 20

407.625 - 413 / 417.625 - 423 MHz (Government and Public Safety)

The frequency bands 407.625 - 410 MHz / 417.625 - 420 MHz are currently used by Government for a variety of fixed and mobile applications. The 2 x 3 MHz immediately

above this (i.e. 410 - 413 MHz / 420 - 423 MHz) is currently used for single frequency fixed links. Any provision of telecommunication facilities, including wireless systems, by the Government should be in accordance with the Telecommunications Act of 1996 as amended.

This band will be used primarily for public safety and by local/regional authorities. The use of the band for fixed links will be minimised as far as possible, thus releasing additional spectrum for mobile use.

The bands 407.625 - 413 / 417.625 - 423 MHz will provide spectrum for local and regional authorities for mobile radio (primarily trunked). It is envisaged that the bands 410 - 413 / 420 - 423 MHz will be used primarily for digital trunked radio (the frequencies are within one of the bands designated for TETRA in Europe). A significant number of fixed links have been migrated out of the 410-413/420-423 MHz bands.

NF 21

413 - 417.625 / 423 - 427.625 MHz

These frequencies are primarily used for fixed links at present; with the exception of the frequencies 416.1 - 417.625 MHz (see NF 19) assigned to ESKOM. The fixed links are currently being migrated out of this band:

- 413 - 413.7625 / 423 - 423.7625 MHz. Public mobile data network(s). This spectrum is used for public data networks in South Africa.

- 413.7625 - 416.1 / 423.7625 - 426.1 MHz. Public trunking networks using digital trunked radio. The band is part of the spectrum which is designated for TETRA in Europe. It is envisaged that the band would most likely be used for public digital trunking networks, although other applications such as private radio systems could also be implemented in the band.

- 426.1 - 427.625 MHz. is now allocated to single frequency mobile.

NF 22

427.625 - 430 MHz (trunked mobile radio and single frequency links)

The single frequency links in this band are currently being moved to higher bands. It is recognised that in practice it will be necessary to retain some single frequency links in UHF. Therefore the band 427.625 - 430 MHz is used for single frequency links in rural areas.

NF 23

430 - 440 MHz (amateur band and short range radio devices (SRD) applications)

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), and it has effectively been treated as an ISM band in South Africa for a number of years. Furthermore, the regulation in terms of Section 30(9)(a) specifies

the use of the band for low power 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.

The Authority has received requests to use the sub-band 430 - 432 / 438 - 440 MHz for PMR. Currently the ITU Radio Regulations do not cater for the MOBILE/FIXED allocation in this band.

NF 24

440 - 450 MHz (migration from fixed to mobile)

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. A significant number of fixed links in the band have already been moved to higher frequencies.

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. There has been no interest shown in the usage of this band for dual frequency alarms.

The band (446 – 446.100 MHz) is now allocated to the PMR446 service. Current repeater systems will be migrated to the portion of this band not affected by PMR446. No new assignments are currently being made in this band. The band (441 – 441.100 MHz) will now be used for simplex mobile systems.

NF 25

450 - 470 MHz

This frequency range is currently used for a variety of fixed and mobile applications. This band is currently used as follows:

- 450 - 453 / 460 - 463 MHz. Fixed links and mobile data. Considering the uniqueness of South Africa in terms of vast rural areas that are very sparsely populated, this frequency band is tremendously important for fixed operators. This band will therefore continue to be used for dual frequency fixed links where it is not practical to move to higher frequencies. This is the only frequency band below 1 GHz currently available for the deployment of fixed links.

- 453 - 453.975 and 463 - 463.975 MHz. Single frequency mobile applications.

- 453.975 - 454.425 MHz. Block allocation for private paging. Paging assignments from elsewhere in UHF should be migrated to this band. The sub-band 454.325 - 454.425 MHz is allocated specifically for on-site paging.

- 454.425 - 460 MHz / 464.425 - 470 MHz. This band is allocated to private trunked radio systems. The band includes spectrum currently used by Transtel for their trunked radio system and other rail services (455 - 456.4875 / 465 - 466.4875). In the previous edition of SABRE it was stated that Transtel will have to swap the BTX and MTX frequencies but after careful consideration of the impact of this change the

Authority has decided that the current BTX and MTX arrangement will not be changed.

- 463.975 - 464.425 MHz. Block allocation for low power mobile radios, including short-range business radio. The sub-band 464.375 - 464.425 MHz is allocated exclusively for the control of hazardous equipment (e.g. cranes).

In addition to the above mobile and fixed services, sharing with FWA would occur in the band 455 - 460 / 465 - 470 MHz, for rural areas. There are a number of potential FWA systems that can operate in this band.

NF 26

470 - 854 MHz.

The latest annual broadcasting frequency plan should be consulted for the latest information on the use of this band. 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 27

800MHz sharing.

The Authority embarked on a public process to determine the socio-economic, technical and administrative feasibilities and implications on the need for sharing 790- 854 MHz band between WLL/FWA/links and UHF television broadcasting service. The findings presented two conflicting viewpoints. One viewpoint was that sharing the band between analogue broadcasting transmissions and digital transmissions is technically not feasible due to much higher protection ratio required for the broadcasting transmissions compared to digital transmissions. The other viewpoint noted that broadcasting studio-to-transmitter links on digital transmissions has been operating on a shared basis in the particular broadcasting band without any technical problems. The Authority has taken a decision to conduct a full-scale research into sharing possibilities with the outlook of formulating the sharing details and in particular, the sharing criteria and the appropriate protection ratio in order to ensure that the two services are able to co-exist effectively. Results of this research will be made known through the Government Gazette.

NF 28

856 - 900 MHz (migration of fixed links to higher frequencies)

There are currently a range of fixed links within these frequencies, including point-to-point links in the 856 - 888 MHz band and troposcatter links in the 862 - 900 MHz band. A number of these links have been migrated to make way for new services. In the case of those that couldn't be moved, coordination with new services is being performed e.g. E-GSM.

NF 29

864.1 - 868.1 MHz (CT2)

The CT2 cordless telephony system is currently heavily used in South Africa. CT2 is also used extensively in Europe and in some densely populated areas of the Asia-Pacific region e.g. Hong Kong and Singapore.

Considering the number of users currently connected to CT2, and since this spectrum is not earmarked for another application, the allocation of the band to CT2 will be retained, for both cordless telephony and FWA applications.

NF 30

872 - 905 / 917 - 950 MHz (Fixed Wireless Access (FWA) sharing)

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

NF 31

876 - 880 / 921 - 925 MHz (possible use for digital PMR)

This band is currently proposed in Europe for digital private mobile radio for the railways using a PMR system based on GSM (GSM-R). In South Africa also, this band offers the possibility for large organisations (such as the railways) to use GSM-based PMR systems. The band might also be one in which TETRA-based equipment is available in the future. There may also be a possibility of FWA sharing these frequencies, particularly in rural areas.

Although the national railway operator does not foresee the future usage of GSM-R, there have been enquiries from other entities that see a possibility of GSM-R use in projects like GAUTRAIN. The Authority has decided to allocate this band to digital trunking systems on national basis. This does not preclude the use of GSM-R in certain projects where it might be feasible.

NF 32

880 - 890 / 925 - 935 MHz (reserved for GSM extension)

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

NF 33

914 - 915 / 959 - 960 MHz (reallocation to GSM)

The use of CT1 cordless telephones is no longer allowed within South Africa from 31 December 2000. This decision has been published in Government Notice 4201 of 2000 in Gazette number 21722 of 3 November 2000. This band was reallocated to mobile (GSM) systems.

NF 34

915 - 921 MHz

This is part of ITU Radio Region 2 ISM band 902 - 928 MHz (centre frequency 915 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.

Radio frequency identification (RFID) is a wireless system that uses radio frequency communication to automatically identify, track and manage objects, people or animals. The wireless system consists of two main components:

- A transceiver (RFID reader)
- A transponder (RFID tag)

When the RFID reader is energised, it creates an electromagnetic zone surrounding it. When a RFID tag comes into the contact zone, the RFID reader decodes the data stored in the tag. Each tag can be configured with a unique identification number. Finally, the data is passed to the host computer for processing.

NF 35

925 - 925.4 MHz (portion of extended GSM band)

Since there has been no expressed interest in two-way paging, the Authority has decided to reallocate this portion of the band to extended GSM

NF 36

1350 - 1375 / 1492 - 1517 and 1375 - 1400 / 1427 - 1452 MHz (fixed links)

These bands are allocated in Europe (CEPT Recommendation T/R 13-01), Annex A and B respectively, for the consolidation of fixed links around 1.5 GHz, which cannot move to higher frequencies.

The use of these bands will be limited to low capacity links. For each of the two bands, the basic channel arrangement proposed in T/R 13-01 provides for 12 paired channels of 2 MHz each, with carrier spacing of 1000 kHz, 500 kHz, 250 kHz and 25 kHz derived from this by means of subdivision. There has been a huge demand for 250 KHz channel spacing which was not catered for previously. The new channel arrangement will also cater for 250 kHz systems.

NF 37

1400 - 2700 MHz (FWA above 1 GHz)

A number of frequency bands in the range 1.4 - 2.5 GHz are allocated to FWA-services in rural and in some cases urban areas. FWA will also be allowed on an exclusive basis in one area of this spectrum. Sharing will require sharing criteria to be established to ensure that FWA can coexist satisfactorily with the other services in the band. In some cases the FWA technology may be the same as that used for other services in the band (e.g. DECT, GSM), in which case the sharing will be relatively straightforward.

NF 38

1427 - 1452 / 1492.5 - 1517.5 MHz (fixed links)

The majority of these links have been migrated to frequencies above 3 GHz and to the new channel plans specified in CEPT T/R 13-01.

NF 39

1452 - 1492 MHz (digital audio broadcasting)

This band has been allocated internationally for use for digital broadcasting (S-DAB and T-DAB). Draft ECC decision ECC/DEC/(03)AB has decided 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 with the long term aim to migrate the fixed link users of the frequencies 1452 - 1464 MHz (paired with 1517.5 - 1529.5 MHz) to other frequencies, if possible above 3 GHz.

NF 40

1610 - 1626.5 MHz (MSS)

These frequencies have been allocated worldwide for mobile satellite systems (Earth-to-space links). In the case of some operators the band is paired with 2483.5 - 2500 MHz, while for others the space-to-Earth links are also in 1610 - 1626.5 MHz. Mobile satellite communications have the potential to provide valuable benefits for South Africa, in particular in providing telecommunications to remote areas. These frequencies are largely unused in South Africa at present, and should be reserved for MSS use. Channels 2482.5MHz, 2489.5MHz and 2496MHz have been reserved for video monitoring of forests to combat fires.

NF 41

1670 - 1675 / 1800 - 1805 MHz (TFTS)

These frequencies have been withdrawn for use in Europe for the Terrestrial Flight Telephone System (TFTS). Accordingly ERC decision ERC/DEC/(92)01 was withdrawn in November 2002. Part of this band is now allocated to broadband FWA systems.

NF 42

1710 - 1785 / 1805 - 1880 MHz (GSM-1800 frequencies)

These are the frequencies on which the GSM-1800 system operates (CEPT Recommendation T/R 22-07 refers), from which fixed links have been migrated in South Africa. Conditions for access to these frequencies are specified in the Telecommunications Act, as amended. Sharing of these frequencies by FWA applications is also likely to be possible, especially in rural areas.

NF 43

1880 - 1900 MHz (FWA)

This band is allocated to FWA including DECT cordless telephony. No new fixed link assignments are being made within the band, and existing fixed links are in the process of being cleared from the band. The DECT technology may be used for cordless telephony, office wireless PABXs, and local telepoint systems,- to increase the capacity of the cellular networks and to provide FWA systems in remote and dense areas. Other FWA technologies are also available for deployment in this band. For these reasons, the allocation of this band to FWA is important to South Africa.

NF 44

1885 - 2025 and 2110 - 2200 MHz (UMTS/IMT-2000)

These bands are intended for use on a worldwide basis for the implementation of UMTS/IMT-2000 systems generally referred to as third generation systems.. Within these bands, the bands 1980 - 2010 and 2170 - 2200 MHz are intended for the satellite component of UMTS/IMT-2000. Systems are likely to become available within the first decade of this (21st) century. GMPCS satellite systems are being developed for operation in these bands. South Africa plays a crucial role in the provisioning of GMPCS services in these bands since some Earth Gateway stations have been built in South Africa.

The frequency bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz are generally referred to as the terrestrial components of the IMT-2000 core bands. These bands are likely to be used for first deployments of IMT-2000 throughout the world and are therefore seen as the most important IMT-2000 frequency bands.

The UMTS/IMT-2000 bands are currently used for fixed links in South Africa. A number of UMTS/IMT-2000 systems are already in operation in several countries, while locally the Act, as amended in 2001, provides for the licensing of third generation (3G) spectrum, among others, to certain operators named in the Act. Consequently, local operators are already assessing the impact of implementing such systems. Urgent measures are being taken in terms of the current migration plan to move fixed links to frequencies above 3GHz in accordance with international trends. In this respect, the most immediate need in South Africa is for frequencies for terrestrial component of UMTS/IMT2000.

NF 45

1900 - 1920 MHz (FWA)

This band is allocated exclusively for FWA. Various FWA technologies, such as DECT, are available for operation in this band. Depending on the FWA technology selected, it may be required to establish frequency sharing criteria between the different technologies.

NF 46

2025 - 2110 and 2200 - 2290 MHz (fixed links and FWA)

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 FWA.

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 FWA.

  2290 – 2300 to be used for Fixed Links.

NF 47

2300 - 2500 MHz

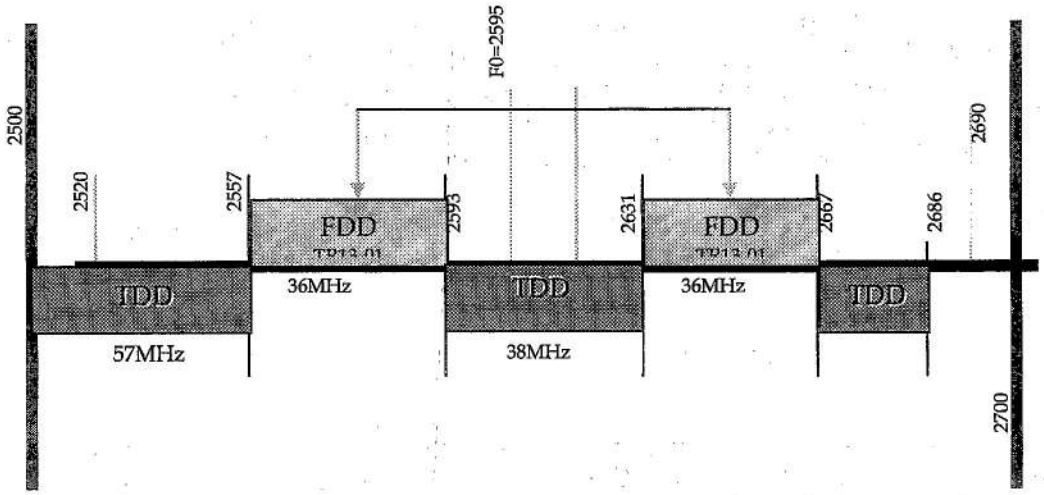
Within the range 2300 – 2500 MHz the frequency bands 2307 – 2387 MHz paired with 2401 – 2481 MHz is used extensively for terrestrial point-to-multipoint systems in line with ITU-R Recommendation F.746 Annex 1. PTMP systems are deployed extensively across the country, in particular in rural areas, and will have to be protected into the foreseeable future as they provide cost effective alternatives for rural communications.

The sub-band 2400 – 2483.5 MHz is used for WLAN and SRD type applications (Government Gazette No 26193, Notice 533 of 24 March 2004 refers..). The sub-band 2483.5 – 2500 MHz is allocated for mobile-satellite systems in the space-to-Earth direction. The band 2400 – 2500 is also allocated to ISM (Industrial, Scientific and Medical) equipment and has primary status over the other applications within the band. ISM equipment (e.g. microwave ovens, RF treatment used against cancer, etc) does not include any telecommunication equipment (e.g. WLAN, spread spectrum radios, etc.).

NF 48

2500 - 2700 MHz

This band is now segmented to cater for Time Division Duplex (TDD) and Frequency Division Duplex (FDD) systems. The FDD systems will be point to point links according to CEPT Recommendation T/R 13-01.



TDD allocations.

2500-2557 MHz

2593 – 2631 MHz

2667 -2686 MHz

FDD Allocation.

2557-2593MHz//2631-2667MHz.

NF 49

The radio astronomy service only requires protection for existing and planned radio astronomy observatories in South Africa. The required protection is therefore geographically limited but a single area cannot be specified as the required protection is depended on the location and the transmission characteristics of the interfering sources. The protection requirements for the radio astronomy service are determined by the threshold levels specified in Recommendation ITU-R RA.769-1.

The Hartebeesthoek Radio Astronomy Observatory is the only existing facility in South Africa and is located at longitude 27° 41' East and latitude 25° 53' South.

The only planned radio astronomy observatory, at this stage, is the SKA telescope where the core antenna array station may be placed at a location yet to be determined in the Northern Cape Province and the remote array stations at locations yet to be determined in the Northern Cape Province, in the other provinces and in neighbouring countries.

NF 50

The band 3400 – 3600 MHz is allocated exclusively in South Africa to wireless local loop (WLL) (or fixed wireless access (FWA)) under the Fixed Service (FS)). The use of this band is intended to be in line with technology developments in Europe, using point-to-point (PTP) and point-to-multipoint (PTMP) topologies. Both narrowband and broadband radio access systems are considered for this band.

Due to the national use of this band for WLL or FWA the application of Fixed Satellite Service (FSS) shall not be allowed.

NF 51

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.

This band is shared with FSS (space-to-Earth) on a strictly co-ordinated basis (see NF 55).

Migration:

Analogue terrestrial systems operating under ITU-R Recommendation F.382 should be replaced by digital systems complying with ITU-R F.635 Annex 1.6. This replacement should proceed according to the natural lifetime replacement of equipment, but all analogue systems should be replaced by 31 December 2005.

NF 52

The band 4400 – 5000 MHz is allocated to electronic news gathering (ENG)/ outside broadcasting (OB) services under the FS. The band 4400 – 4500 MHz is block allocated to ENG/OB whereas the band 4500 – 5000 MHz will be shared with Government Services.

NF 53

The band 5150 – 5350 MHz is allocated to Wireless Access Systems including Radio Local Area Networks (WAS/RLANs) in line with European developments and is limited to 200 milliwatts (mW) mean Effective radiated power relative to an isotropic antenna (EIRP) for indoor use only.

The band 5470 – 5725 MHz is allocated to WAS in line with European developments and is limited to 1 W mean EIRP for both indoor and outdoor use1
For outdoor linking of WAS/RLANs systems the band 17.1 – 17.3 GHz can also be used.
Non-geostationary satellite orbit (NGSO) Mobile Satellite Services (MSS) feeder links in the band 5150 – 5250 MHz shall be protected from harmful interference from indoor WAS/RLANs systems.

NF 54

The band 5725 – 5875 MHz is designated as an ISM band (S5.150). Industrial, Scientific and Medical Apparatus (ISM) equipment operating in this band shall observe International Special Committee on Radio Interference (CISPR) 11 and its amendments.
Radiocommunication services will be allowed to operate in accordance with S5.150 in this band, using PTP and PTMP topologies. New radiocommunication systems to be introduced in an ISM band shall not cause harmful interference to other radiocommunication systems already deployed.

NF 55

The band 3625 – 4200 MHz, part of the C-band, is used extensively for FSS (space-to-Earth) applications. This band is also shared with FS (see NF 51).

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 (see NF 56).

The C-band is also used for satellite news gathering (SNG) operations. The use of this band for SNG applications will require frequency co-ordination on a case-by-case basis allowing sufficient time for this exercise. In order to avoid the interference problems associated with C-band SNG operations, it is highly recommended that SNG operations in South Africa use the Ku-band as far as possible (see NF 59).

For reasons of efficient spectrum use by all services in the C-band, as well as environmental ethics the deployment of large earth station antennas (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. These selected sites are known internationally as "Teleports".

NF 56

6 GHz ENG/OB

The band 5850 – 5925 MHz is allocated for temporary deployments (ENG/OB) under the FS. This band is also used for FSS (Earth-to-space) (see NF 55).

5925 - 6425 MHz (Lower 6 GHz band)

This band is used on a national basis for high capacity, core network telecommunication services under the FS using a PTP topology over long hop lengths. The channelization arrangement for this band is ITU-R Recommendation F.383. This band is shared with FSS (Earth-to-space) (see NF 55).

6425 – 7110 MHz (Upper 6 GHz band)

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

The channelization arrangement for this band is ITU-R Recommendation F.384. This band is 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.

7110 - 7425 MHz (Lower 7 GHz band)

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

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

7425 - 7750 MHz (Upper 7 GHz band)

This band is used on a national basis for medium to high capacity telecommunication 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 this band is ITU-R Recommendation F.385 Annex 3.

7725 – 8275 MHz (Lower 8 GHz band)

This band is used on a national basis for high capacity telecommunication 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.

8275 – 8500 MHz (Upper 8 GHz band)

This band is used on a national basis for low to medium capacity telecommunication services under the FS using a PTP topology over long hop lengths. As per national agreement users will have access to this band using the concept of one or two reserved channels. 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.

Migration:

Analogue systems operating as per ITU-R Recommendation F.383 in the band 5925 - 6425 MHz and as per ITU-R Recommendation F.384 in the band 6425 - 7110 MHz should be replaced by digital systems. This replacement should proceed according to the natural lifetime replacement of equipment, but all analogue systems should be replaced by 31 December 2005.

Analogue systems operating as per CCIR Report 934 Annex V in the Lower 7 and Upper 7 GHz bands should be replaced by digital systems by 31 December 2005.

Digital systems operating in the Lower 7 and Upper 7 bands in accordance with CCIR Report 934 Annex V should migrate to the channelization arrangement in accordance with ITU-R Recommendation 385 Annex 3. This replacement should proceed according to the natural lifetime replacement of equipment.

The band 8275 - 8500 MHz serves as one of the preferred destination band for those systems, having to migrate from the bands 1710 - 1785 MHz and 1805 - 2025 MHz..

NF 57

The band 10.15 – 10.3 GHz paired with 10.5 – 10.65 GHz (the 10 GHz band) is used for FS systems of PTP and PTMP topologies.

The channelization arrangement according to CEPT/ERC/REC 12-05 Annex A applies.

NF 58

The band 10.7 – 11.7 GHz is used on a national basis for high capacity, core network and access network telecommunication 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) (see NF 59).

Migration:

Analogue systems operating in this band should be replaced by digital systems. This replacement should proceed according to the natural lifetime replacement of equipment, but all analogue systems should be replaced by 31 December 2005.

NF 59

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, is 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 (see NF 9).

The Ku-band is the preferred band for SNG operations.

For reasons of efficient spectrum use by all services in the Ku-band, as well as environmental ethics, the deployment of large earth station antennas (greater than 1.8 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. These selected sites are known in most parts of the world as "Teleports".

Space segments from a range of satellites are currently available, while additional space segments will become available for use by South African operators.

In accordance with Government Gazette 19343 (Notice 2358, dated 9 October 1998), the sub-bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also available for direct-to-home (DTH) applications on a secondary basis.

NF 60

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

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

NF 61

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

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

ITU-R Recommendation F.636 is the ITU recommended channelization arrangement for systems operating in this band satisfying the capacity requirements.

NF 62

The band 17.7 – 19.7 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, subject to rainfall.

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

NF 63

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, subject to rainfall.

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. In a unique South African approach the ten sub-bands channelization arrangement was further specified as follows:

Sub-band	Go: Band edges (GHz)	Return: Band edges (GHz)	Subdivision
1	21.224 - 21.336	22.456 - 22.568	13 x 7 MHz + 6 x 3.5 MHz
2	21.336 - 21.448	22.568 - 22.680	13 x 7 MHz + 6 x 3.5 MHz
3	21.448 - 21.560	22.680 - 22.792	13 x 7 MHz + 6 x 3.5 MHz
4	21.560 - 21.672	22.792 - 22.904	13 x 7 MHz + 6 x 3.5 MHz
5	21.672 - 21.784	22.904 - 23.016	8 x 14 MHz
6	21.784 - 21.896	23.016 - 23.128	8 x 14 MHz
7	21.896 – 22.008	23.128 - 23.240	4 x 28 MHz (4 x 28 MHz or 3 x 28 MHz and 8 x 3.5 MHz)
8	22.008 – 22.120	23.240 - 23.352	4 x 28 MHz
9	22.120 – 22.232	23.352 - 23.464	1 x 112 MHz (16 x 7 MHz or 8 x 14 MHz)
10	22.232 – 22.344	23.464 - 23.576	1 x 112 MHz

European Conference of Postal and Telecommunications (CEPT) Recommendation T/R 13-02 Annex A provides the channelization arrangement for the band 22 – 22.6 GHz paired with 23.0 – 23.6 GHz (part of current 23 GHz band, which is not affected by HDTV).

The band 21.4 – 22 GHz is allocated to the Broadcast Satellite Services (BSS) high definition television (HDTV) from 1 April 2007 on a primary basis. FS will operate in this part of the spectrum after 1 April 2007 on a secondary basis.

Migration:

Systems operating under the FS in the band, 21.4 – 22 GHz can continue to do so on a secondary basis after 1 April 2007 from which date this band is allocated to the BSS HDTV on a primary basis. Where required, FS systems may have to migrate to the band, 22 – 22.6 GHz paired with 23.0 – 23.6 GHz, which is not affected by the new allocation or, where possible systems can also migrate to the 26 GHz and 38 GHz bands.

NF 64

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

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

It is anticipated that an unmanned receive only earth station, forming part of the National Polar-orbiting Operational Environmental Satellite System (NPOESS), will be located in South Africa, and that this system will operate within the 25.5 to 27 GHz frequency range within the Earth Exploration Satellite (space-to-earth) service."

NF 65

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, subject to rainfall.

NF 66

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

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

APPENDIX C

Migration Strategy

Strategy for migration of fixed links below 3 GHz

The overall strategy for migrating fixed link frequencies to higher in the spectrum has a number of strands:

- UHF (400 - 470 MHz) links are being moved above 3 GHz where possible. However, spectrum is available in the UHF band for cases where a sound case can be made why a link should remain at UHF.

- Links in the range 1.3 - 2.7 GHz are also being moved to above 3 GHz where possible. However, in some cases the links can remain unchanged, or be moved to spectrum available in the band 1.3 - 2.7 GHz, if a case can be made why they should not move to higher frequencies.

- Allocations for fixed links are available in the bands 1350 – 1375 MHz paired with 1492 – 1517 MHz, 1375 – 1400 MHz paired with 1427 – 1452 MHz, 2025 – 2110 MHz paired with 2200 – 2285 MHz in accordance with the plans agreed in CEPT Recommendation T/R 13-01 Annex A and B and ITU-R Recommendation F.1098. These frequencies will be used in cases where a user is migrating links from the UHF band, or from other frequencies around 1.5 GHz.

The decision as to whether a particular link may remain below 3 GHz will be judged on a case-by-case basis, and will depend upon a sound justification being made as to why the link cannot be moved higher. The decision will be based upon a number of parameters, including the capacity required, distance to be covered, geographical location, and the cost of alternative means of providing the link. As a general rule, for example, the Authority will discourage the use of radio for low capacity links over short distances.

Strategy for migration applicable to frequencies above 3 GHz

Migration into and within the 3-70 GHz spectrum is driven by various factors, including alignment with international and regional allocations, anticipation of emerging technologies, and planned expansions of existing service providers. The development of the Band Plan included consideration of these issues as well as those associated with previously issued Government Gazette Notices.

A number of techniques and considerations were used to establish a strategy for encouraging voluntary migration from today's allocations table to the proposed new Band Plan. These techniques and considerations included:

- current spectrum congestion,
- spectrum efficient channel plans,
- preliminary Fixed Link Guidance,
- voluntary band and equipment migration.

Explanation of the terminology used.
Immediate – Means six months from the date of the official adoption of this SATFA plan. This term is used in all cases where migration time-scale set in the previous band plan has expired. The Authority will not renew [*on the old frequency(ies)*] licences in the frequency bands where migration is suppose to have occurred already.
Start time – Where there is an indication of a number of years to migrate, the years are calculated from the time of the official adoption of this SATFA band plan

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
35 – 35.25	Model Aircraft	No change	Migrate mobile users to adjacent blocks. Immediate.
40.675 – 40.685	Amateur	No change	Migrate low power paging at 40.68 MHz to 27.12 MHz, 53 MHz or UHF paging. Immediate
60.025 – 60.225	Mobile	No change	Migrate model aircraft to 35 – 35.25 MHz. 1 year
138.975 – 140.5	Duplex frequency mobile	No change	Outstanding SF assignments to be migrated or changed to DF. Immediate
141.5 – 142.775	Duplex frequency mobile	No change	Outstanding SF assignments to migrate. Immediate
149.9 – 150.05	Single frequency	Mobile Satellite (earth-to-space)	Current SF assignments to migrate. Immediate

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
157.95 – 160.6	Duplex frequency mobile	Duplex frequency mobile	Paired with 162.55 – 165.2 MHz. Tx / Rx separation to be altered
162.55 – 165.2	Duplex frequency mobile	Duplex frequency mobile	Paired with 157.95 – 160.6 MHz. Tx / Rx separation to be altered. 1 year *
380 – 400	Digital Trunking	Digital Trunking (Emergency) 380 - 385 // 390 – 395 MHz. Digital Trunking 385 – 390 // 395 – 399.9 MHz	Current government assignments to migrate out of the band. 3 years
407.625 – 413	BTX paired with 417.625 - 420	BTX paired with 417.625 – 420 (Government and Public Safety)	Migrate Links to frequencies between 1 and 3 GHz Immediate
413 – 413.7625	Mobile Data Networks (Public)	No change	Migrate Links to frequencies between 1 and 3 GHz Immediate
413.7625 – 416.1	Digital Public Trunking	No change	Migrate Links to frequencies between 1 and 3 GHz Immediate
423 – 423.7625	Mobile Data BTX paired with 413 – 413.7625 MHz Private and Public network	No change	Migrate links to the band 1517 – 1525 MHz, to be assigned from the lower frequencies upward. Immediate
423.7625 – 426.100	Trunk Mobile BTX paired with 413.7625 – 416.100 MHz Public Trunking	No change	Migrate links to frequencies above 3 GHz Immediate

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
440 – 450	Telemetry / Data BTX at 440 – 441 MHz paired with 445 – 446 MHz.	No change	Migrate links to frequencies above 3 GHz. Immediate.
	Single Frequency Mobile at 441 – 441.1 MHz		Migrate Mobile BTX to adjacent or alternate mobile band. Immediate.
	Mobile BTX at 441.1 – 445 MHz paired with 446.1 – 450 MHz		Migrate links to frequencies above 3 GHz. Immediate
	Mobile: PMR (446 – 446.1 MHz)		Migrate Mobile MTX to adjacent or alternate mobile band. Immediate.
450 – 460	Fixed Links at 450 – 453 MHz paired with 460 – 463 MHz	No Change	
	Mobile MTX at 454.025 – 454.125 MHz and SF Mobile at 454.275 – 454.725 MHz.	Paging 453.975 – 454.425 MHz (Upper 4 channels reserved for onsite paging)	Immediate (Migrate low power paging from 40.68 MHz and single – site paging from VHF – high to this band.)
	Trunked Mobile MTX at 454.425 – 460 MHz paired with 464.425 – 470 MHz	No Change	Migrate DF mobile assignments to 440 - 450 MHz or alternative mobile bands. Immediate.
464.425 – 470	Trunked Mobile BTX paired with 454.425 – 460 MHz	No Change	Migrate DF mobile assignments to 440 - 450 MHz or alternative mobile bands.

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
			Immediate. Migrate SF assignments to 463 - 463.975 MHz, DF or LPMR. Immediate.
862 - 960	CT2 Cordless telephones at 864.1 - 868.1 MHz.	No Change	Links to migrate to above 1 GHz. Immediate.
	Fixed Links at 868.1 - 876 MHz.		Only links impractical to migrate will be retained in this band. Immediate.
	Trunked Mobile MTX at 876 - 880 MHz paired with 921 - 925 MHz		Links to migrate to above 1 GHz. Immediate.
	E-GSM Cellular MTX at 880 - 890 MHz paired with 925 - 935 MHz		Links to migrate to above 1 GHz. Immediate
	GSM 890 - 915 MHz paired with 935 - 960 MHz		Links to migrate to above 1 GHz. Immediate
	Short Range Devices 915 - 921 MHz		Links to migrate to above 1 GHz. Immediate
1350 - 1400	Fixed Links 1350 - 1375 MHz paired with 1492 - 1517 MHz. (CEPT T/R 13-01 Annex A) Fixed Links 1375 - 1400 MHz paired with 1427 - 1452 MHz (CEPT T/R 13-01 Annex B) This allocation to be used for dual frequency links migrated from other bands.	No Change	Migration of links not in accordance with CEPT T/R 13-01 Annex A or B Immediate
1427 - 1452	Fixed Links.	No Change	Migration of links

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
	(CEPT T/R 13-01 Annex B) paired with 1375 - 1400 MHz This allocation to be used for dual frequency links migrated from other bands.		not in accordance with CEPT T/R 13-01 Annex B Immediate.
1452 – 1492	Terrestrial Digital Audio Broadcasting at 1452 – 1479.5 MHz.	No Change	Links to migrate to above 3 GHz. Immediate
	Satellite Digital Audio Broadcasting at 1479.5 – 1492 MHz		
1492 – 1525	Fixed Links at 1492 – 1517 MHz paired with 1350 – 1375 MHz (CEPT T/R 13-01 Annex A) This allocation to be used for dual frequency links migrated from other bands.	No Change	Migration of links not in accordance with CEPT T/R 13-01 Annex A: Immediate.
	Single frequency Fixed links at 1517 – 1525 MHz This allocation to be used for single frequency links migrated from other bands.		
1710 – 1785	GSM 1800 Paired with 1805 - 1880 MHz	No Change	Links to migrate to above 3 GHz. Immediate
1805 – 1880	GSM 1800 Paired with 1710 – 1785 MHz	No Change	Links to migrate to above 3 GHz. Immediate
1880 – 1920	FWA at 1880 – 1920	No Change	Links to migrate to

Frequency Band (MHz)	Old Application	New Application	Migration &Time scale
	MHz		above 3 GHz. Immediate.
1920 – 1980	Terrestrial component of UMTS / IMT-2000 (FDD) paired 2110 – 2170 MHz	No Change	Migrate links to frequencies above 3 GHz. Immediate.
1980 – 2010	Satellite component of UMTS / IMT-2000 paired with 2170 – 2200 MHz	No Change	Migrate links to frequencies above 3 GHz. Immediate.
2010 – 2025	Terrestrial component (TDD) of UMTS / IMT-2000	No Change	Migrate links to frequencies above 3 GHz. Immediate.
2025 – 2110	Fixed Links at 2025 – 2110 MHz paired with 2200 – 2285 MHz. ITU-R F.1098 and CEPT 13-01 Annex C refers.	No change	Migrate links not in conformity with ITU-R F.1098 to frequencies above 3 GHz. Immediate
2110 – 2170	Terrestrial component of UMTS / IMT-2000 paired with 1920 – 1980 MHz	No change	Migrate links to frequencies above 3 GHz. Immediate.
2170 – 2200	Satellite component of UMTS / IMT 2000 paired with 1980 – 2010 MHz	No change	Migrate links to frequencies above 3 GHz. Immediate.
2200 – 2290	Fixed Links at 2200 – 2285 MHz paired with 2025 – 2110 MHz. ITU-R F.1098 and CEPT 13-01 Annex C refers.	No Change	Migrate links not in accordance with ITU-R F.1098 to frequencies above 3 GHz. Immediate Migrate links to frequencies above 3 GHz. Immediate

APPENDIX D – ITU-R Footnotes

5.111 The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 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** and in Appendix **13**.

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**).

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

13 360-13 410 kHz,

25 550-25 670 kHz,

37.5-38.25 MHz,

73-74.6 MHz in Regions 1 and 3,

150.05-153 MHz in Region 1,

322-328.6 MHz,

406.1-410 MHz,

608-614 MHz in Regions 1 and 3,

1 330-1 400 MHz,

1 610.6-1 613.8 MHz,

1 660-1 670 MHz,

1 718.8-1 722.2 MHz,

2 655-2 690 MHz,

3 260-3 267 MHz,

3 332-3 339 MHz,

3 345.8-3 352.5 MHz,

4 825-4 835 MHz,

4 950-4 990 MHz,

4 990-5 000 MHz,

6 650-6 675.2 MHz,

10.6-10.68 GHz,

14.47-14.5 GHz,

22.01-22.21 GHz,

22.21-22.5 GHz,

22.81-22.86 GHz,

23.07-23.12 GHz,

31.2-31.3 GHz,

31.5-31.8 GHz in Regions 1 and 3,

36.43-36.5 GHz,

42.5-43.5 GHz,

42.77-42.87 GHz,

43.07-43.17 GHz,

43.37-43.47 GHz,

48.94-49.04 GHz,

76-86 GHz,

92-94 GHz,

94.1-100 GHz,

102-109.5 GHz,

111.8-114.25 GHz,

128.33-128.59 GHz,

129.23-129.49 GHz,

130-134 GHz,

136-148.5 GHz,

151.5-158.5 GHz,

168.59-168.93 GHz,

171.11-171.45 GHz,

172.31-172.65 GHz,

173.52-173.85 GHz,

195.75-196.15 GHz,

209-226 GHz,

241-250 GHz,

252-275 GHz

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **4.5** and **4.6** and Article **29**). (WRC-2000)

5.150 The following bands:

13 553-13 567 kHz	(centre frequency 13 560 kHz),
26 957-27 283 kHz	(centre frequency 27 120 kHz),
40.66-40.70 MHz	(centre frequency 40.68 MHz),
902-928 MHz	in Region 2 (centre frequency 915 MHz),
2 400-2 500 MHz	(centre frequency 2 450 MHz),
5 725-5 875 MHz	(centre frequency 5 800 MHz), and
24-24.25 GHz	(centre frequency 24.125 GHz)

are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. **15.13**.

5.155B 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.

5.151 The bands 13 570-13 600 kHz and 13 800-13 870 kHz are allocated, until 1 April 2007, to the fixed service on a primary basis and to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution **21 (Rev.WRC-95)**. After 1 April 2007, frequencies in these bands may be used by stations in the above-mentioned services, 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.

5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, Iran (Islamic Republic of), Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-2000)

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

5.154 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-2000)

5.155 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation,

Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis.

5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., the Russian Federation, 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-2000)

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

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

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

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

5.160 *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)

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

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

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Moldova, Monaco, Norway, the Netherlands, Poland, Portugal, Slovakia, the Czech Rep., the United Kingdom, the Russian Federation, 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-2000)

5.163 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Estonia, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, 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.

5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Côte d'Ivoire, Denmark, Spain, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Nigeria, Norway, the Netherlands, Poland, Syria, the United Kingdom, Senegal, Slovenia, Sweden, Switzerland, Swaziland, Togo, Tunisia, Turkey and Yugoslavia the band 47-68 MHz, in Romania the band 47-58 MHz and in the Czech Rep. the band 66-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each 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-97)

5.165 *Additional allocation:* in Angola, Cameroon, the Congo, 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, 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.

5.180 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.

5.197A The band 108-117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis, limited to systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international aviation standards. Such use shall be in accordance with Resolution **[COM5/2] (WRC-03)** and shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service which operate in accordance with international aeronautical standards. (WRC-03)

5.199 The bands 121.45-121.55 MHz and 242.95-243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radiobeacons transmitting at 121.5 MHz and 243 MHz (see Appendix **13**).

5.200 In the band 117.975-136 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** and Appendix **13** for distress and safety purposes with stations of the aeronautical mobile service.

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

5.203 In the band 136-137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. **4.4** with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological-satellite service. (WRC-97)

5.203A *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005. (WRC-97)

5.203B *Additional allocation:* in Saudi Arabia, United Arab Emirates, Jordan, Oman and Syria, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis until 1 January 2005. (WRC-97)

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

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

5.208A In making assignments to space stations in the mobile-satellite service in the 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 Table 1 of Recommendation ITU-R RA.769-1. (WRC-97)

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 France, Italy, Liechtenstein, Slovakia, the Czech Rep., the United Kingdom and Switzerland, 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-2000)

5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-2000)

5.212 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., the Congo, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Nigeria, Oman, 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-2000)

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

5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-2000)

5.215 Not used.

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

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

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

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

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

5.221 Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo, Korea (Rep. of), Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, the Russian Federation, Senegal, 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, Yugoslavia, Zambia, and Zimbabwe. (WRC-2000)

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**.

5.224 (SUP - WRC-97)

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)

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

5.226 The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article **31** and Appendix **13**.

In the bands 156-156.7625 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 **13**).

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 frequency 156.8 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.

5.227 In the maritime mobile VHF service the frequency 156.525 MHz is to be used exclusively for digital selective calling for distress, safety and calling. The conditions for the use of this frequency are prescribed in Articles **31** and **52**, and Appendices **13** and **18**.

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

5.237 *Additional allocation:* in the Congo, Eritrea, Ethiopia, Gambia, Guinea, Libya, Malawi, Mali, Senegal, Sierra Leone, Somalia, Tanzania and Zimbabwe, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

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

5.251 *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.

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 (see Appendix **13**).

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).

5.260 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.

5.263 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** and Appendix **13**).

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 dB(W/m^2) for $0° \leq \delta \leq 5°$, $-153 + 0.077\ (\delta - 5)$ dB(W/m^2) for $5° \leq \delta \leq 70°$ and -148 dB(W/m^2) for $70° \leq \delta \leq 90°$, 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)

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo, Djibouti, Georgia, Hungary, Israel, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-2000)

5.5279A The use of this band by sensors in the Earth exploration-satellite service (EESS) (active) shall be in accordance with Recommendation ITU-R SA.1260-1. Additionally, the EESS (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 EESS (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, Portugal, Slovenia, Switzerland and Yugoslavia, 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**.

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

5.286 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)

5.286B 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)

5.287 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 (see Resolution **341 (WRC-97)**). (WRC-97)

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.

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.

5.294 *Additional allocation:* in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Lebanon, Libya, Malawi, Senegal, Sudan, Syria, and Yemen, the band 470-582 MHz is also allocated to the fixed service on a secondary basis.

5.296 *Additional allocation:* in Germany, Austria, Belgium, Cyprus, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libya, Lithuania, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syria, 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-2000)

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.

5.311 Within the frequency band 620-790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33 (Rev.WRC-97)** and **507**). Such stations shall not produce a power flux-density in excess of the value –129 dB(W/m^2) for angles of arrival less than 20° (see Recommendation **705**) within the territories of other countries without the consent of the administrations of those countries.

5.312 *Additional allocation*: in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 645-862 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-97)

5.314 *Additional allocation*: in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis. (WRC-2000)

5.316 *Additional allocation*: in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Israel, Kenya, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Syria, Sweden, Switzerland and Yugoslavia, 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. (WRC-2000)

5.317A Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **224 (WRC-2000)**). 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-2000)

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

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

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

5.321 *Alternative allocation*: in Italy, the band 838-854 MHz is allocated to the broadcasting service on a primary basis as from 1 January 1995.

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, Libya, Morocco, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **9.21**. (WRC-2000)

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

5.328 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 *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations of all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service. The provisions of Resolution **605 (WRC-2000)** apply. (WRC-2000)

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 **[COM5/18] (WRC-03)** shall also apply.

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**. See also Resolution **606 (WRC-2000)**. (WRC-2000)

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 other systems or services operating in accordance with the Table. (WRC-2000)

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, Japan, Jordan, Kuwait, Lebanon, Libya, Morocco, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, 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-97)

5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, Iran (Islamic Republic of), Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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)

5.335 In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection

from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service. (WRC-97)

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

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

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

5.338 In Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-2000)

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

5.339A *Additional allocation:* the band 1 390-1 392 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a secondary basis and the band 1 430-1 432 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis. These allocations are limited to use for feeder links for non-geostationary-satellite networks in the mobile-satellite service with service links below 1 GHz, and Resolution **[COM5/14] (WRC-03)** applies. (WRC-03)

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 Nos. **5.421** and **5.422**,
10.68-10.7 GHz,	except those provided for by No. **5.483**,
15.35-15.4 GHz,	except those provided for by No. **5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz[2],	except those provided for by No. **5.555A**,
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,	

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[2] **5.340.1** The allocation to the earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (WRC-97)

164-167 GHz,
182-185 GHz, except those provided for by No. **5.563**,
190-191.8 GHz,
200-209 GHz,
226-231.5 GHz,
250-252 GHz. (WRC-2000)

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.

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

5.345 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)**.

5.347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Kenya, Mozambique, Portugal, Sri Lanka, Swaziland, Yemen, Yugoslavia and Zimbabwe, the allocation of the band 1 452-1 492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007. (WRC-2000)

5.347A In the bands:

1 452-1 492 MHz,
1 525-1 559 MHz,
1 613.8-1 626.5 MHz,
2 655-2 670 MHz,
2 670-2 690 MHz,
21.4-22.0 GHz

Resolution **[COM4/15] (WRC-03)** applies. (WRC-03)

5.348 The use of the band 1 492-1 525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. However, no coordination threshold in Article **21** for space stations of the mobile-satellite service with respect to terrestrial services shall apply to the situation referred to in No. **5.343**. With respect to the situation referred to in No. **5.343**, the requirement for coordination in the band 1 492-1 525 MHz will be determined by band overlap.

5.348A In the band 1 492-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be –150 dB(W/m^2) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix **5**. The above threshold level of the power flux-density shall apply until it is changed by a competent world radiocommunication conference.

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)

5.348C For the use of the bands 1 518-1 525 MHz and 1 668-1 675 MHz by the mobile-satellite service, see Resolution **225 (Rev.WRC-03)**. (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 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **225 (WRC-2000)**. (WRC-2000)

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

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

5.356 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, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Libya, Lithuania, Mali, Morocco, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, 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-2000)

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

5.362B *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Syria and Tunisia. After these dates, 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. 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-2000)

5.362C *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, 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-2000)

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, Côte d'Ivoire, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep.of the Congo, Syria, Senegal, 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-97)

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)

5.377 In the band 1 675-1 710 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, the meteorological-satellite and meteorological aids services (see Resolution **213 (Rev.WRC-95)***) and the use of this band shall be subject to coordination under No. **9.11A**.

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.

5.379B The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-03)

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.

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

5.379D For sharing of the band 1 668-1 675 MHz between the mobile-satellite service and the fixed, mobile and space research (passive) services, Resolution **[COM5/12] (WRC-03)** shall apply. (WRC-03)

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

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

5.380 The bands 1 670-1 675 MHz and 1 800-1 805 MHz are intended for use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The use of the band 1 670-1 675 MHz by stations in the systems for public correspondence with aircraft is limited to transmissions from aeronautical stations and the use of the band 1 800-1 805 MHz is limited to transmissions from aircraft stations.

5.380A In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified in accordance with Resolution **[COM5/13] (WRC-03).** (WRC-03)

5.382 *Different category of service:* in Saudi Arabia, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kazakstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, Syria, Kyrgyzstan, Romania, Russian Federation, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-97)

5.384A The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **223 (WRC-2000)**. 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-2000).

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

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 (WRC-95)***. The use of these bands shall not commence before 1 January 2000; however the use of the band 1 980-1 990 MHz in Region 2 shall not commence before 1 January 2005.

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

5.389C The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service shall not commence before 1 January 2002 and is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)***. (WRC-97)

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

5.389D In Canada and the United States the use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite service shall not commence before 1 January 2000.

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, Syria 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 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, the use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite services shall not cause harmful interference to stations in the fixed and mobile services before 1 January 2005. After this date, the use of these bands is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)***. (WRC-2000)

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.

5.394 In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 300-2 483.5 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

5.395 In France, 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.

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

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

5.399 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), Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, 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-97)

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

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 (until 1 January 2005 the band 2 500-2 535 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.

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

5.409 Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2 500-2 690 MHz.

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**.

5.411 When planning new tropospheric scatter radio-relay links in the band 2 500-2 690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.

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) shall be effective on 1 January 2005 and is subject to coordination under No. **9.11A**.

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. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Article **21**, Table **21-4**.

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 power flux-density at the Earth's surface shall not exceed the values given in Article **21**, Table **21-4**.

5.417A In applying provision No. **5.418**, in Korea (Rep. of) and Japan, *resolves* 3 of Resolution **528 (Rev.WRC-03)** is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial broadcasting service to additionally operate on a primary basis in the band 2 605-2 630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416**. The provisions of No. **5.416** and Table **21-4** of Article **21** do not apply. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) in the band 2 605-2 630 MHz is subject to the provisions of Resolution **539 (Rev.WRC-03)**. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 605-2 630 MHz for which complete Appendix 4 coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

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

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 pfd value of –122 dB(W/(m^2 · 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 BSS (sound) system, for angles of arrival greater than 35 degrees. (WRC-03)

5.417B In Korea (Rep. of) and Japan, use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418*bis***, 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. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 4 July 2003, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 5 July 2003. (WRC-03)

5.4176C Use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418*bis***, 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. **5.418*bis***, and No. **22.2** does not apply. (WRC-03)

5.418A In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. Use of the band by non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to the provisions of Resolution **539 (WRC-2000)**, and such systems shall be in accordance with Resolution **528 (WARC-92)**. (WRC-2000)

5.418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems 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**. Resolution **539 (WRC-2000)** applies. (WRC-2000)

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), and No. **22.2** does not apply. Resolution **539 (WRC-2000)** applies. (WRC-2000)

5.419 The allocation of the frequency band 2 670-2 690 MHz to the mobile-satellite service shall be effective from 1 January 2005. When introducing systems of the mobile-satellite service in this band, 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**.

5.420 The band 2 655-2 670 MHz (until 1 January 2005 the band 2 655-2 690 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.

5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo, Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Malaysia, Mali, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen and Yugoslavia, 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-2000)

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 system (SIT) shall be confined to the sub-band 2 930 -2 950 MHz.

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

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

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

5.438 Use of the band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be 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)

5.442 In the bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service.

5.443A *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **603 (WRC-2000)**. (WRC-2000)

5.443B *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. 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 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, the aggregate power flux-density produced in the 4 990-5 000 MHz band by all the space stations within any radionavigation-satellite service (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of -171 dB(W/m^2) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **604 (WRC-2000)** applies. (WRC-2000)

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. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **5.444A** and Resolution **114 (WRC-95)** apply. (WRC-2000)

5.444A *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems 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 2010, 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 (WRC-95)**;
- prior to 1 January 2010, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;
- after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2010, the fixed-satellite service will become secondary to the aeronautical radionavigation service.

5.445 Not used.

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/m^2) 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 service shall be in accordance with Resolution **[COM5/16] (WRC-03).** (WRC-03)

5.BD03 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. Number **5.43A** does not apply to the mobile service with respect to FSS earth stations. (WRC-03)

5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland 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**. (WRC-2000)

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

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

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

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

5.447E *Additional allocation:* The band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, Philippines, Sri Lanka, Thailand and Viet Nam. The use of this band by the fixed service is intended for the implementation of fixed wireless access (FWA) systems and shall comply with Recommendation ITU-R F.1613. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. **5.43A** do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of FWA systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the FWA systems by future radiodetermination implementations. (WRC-03)

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

5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

5.448A The use of the frequency band 5 250-5 350 MHz by the earth exploration-satellite (active) and space research (active) services shall not constrain the future development and deployment of the radiolocation service. (WRC-97)

5.448B The earth exploration-satellite (active) service operating in the band 5 350-5 460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)

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

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

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

5.450 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-97)

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

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

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

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

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. of Korea, Singapore, Swaziland, Tanzania, Chad and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.454 *Different category of service:* in Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, 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-2000)

5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Kazakstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis.

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

5.457A In the bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **[COM4/20] (WRC-03).** (WRC-03)

5.457B In the bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations on board vessels may operate with the characteristics and under the conditions contained in Resolution **[COM4/20]** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Mauritania, Oman, Qatar, 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 **[COM4/20]**. (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.

5.459 *Additional allocation:* in Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-97)

5.460 *Additional allocation:* the band 7 145-7 235 MHz is also allocated to the space research (Earth-to-space) service on a primary basis, subject to agreement obtained under No. **9.21**. The use of the band 7 145-7 190 MHz is restricted to deep space; no emissions to deep space shall be effected in the band 7 190-7 235 MHz.

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

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)

5.464 (SUP - 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, Malaysia, 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-97)

5.467 *Alternative allocation:* in the United Kingdom, the band 8 400-8 500 MHz is allocated to the radiolocation and space research services on a primary basis.

5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syria, 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-97)

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, 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-2000)

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

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

5.471 *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, 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.

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, Bulgaria, Cuba, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, 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-2000)

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**).

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

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. In the band 9 300-9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

5.476 In the band 9 300-9 320 MHz in the radionavigation service, the use of shipborne radars, other than those existing on 1 January 1976, is not permitted until 1 January 2001.

5.476A In the band 9 500-9 800 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 radionavigation and radiolocation services. (WRC-97)

5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, 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, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Sweden, 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-2000)

5.478 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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

5.480 *Additional allocation:* in Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Sweden, 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-2000)

5.482 In the band 10.6-10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed –3 dBW. These limits may be exceeded subject to agreement obtained under No. **9.21**. However, in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, China, the United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable.

5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, Yemen and Yugoslavia, 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-2000)

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)

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

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

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 provisions of the Regions 1 and 3 Plan in Appendix **30**. (WRC-2000)

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 geosationary-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)

5.488 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 the provisions of Resolution **77 (WRC-2000)**. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-2000)

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

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

5.491 *Additional allocation:* in Region 3, the band 12.2-12.5 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. The power flux-density limits in Table **21-4** of Article **21** shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix **30**, with the applicable frequency band extended to cover 12.2-12.5 GHz. (WRC-2000)

5.492 Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix **30** may also be used for

transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. (WRC-2000)

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

5.494 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., the Congo, Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, Dem. Rep. of the Congo, Syria, Senegal, 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-97)

5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, Uganda, Portugal, Romania, Slovenia, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-2000)

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

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

5.498 (SUP - WRC-97)

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

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

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, Syria, Senegal, 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-2000)

5.501 *Additional allocation:* in Austria, Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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 in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed

85 dBW. 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. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. **5.43A** does not apply. See Resolution **733 (WRC-2000).** (WRC-2000)

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:

- 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 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;
- 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 the 6 MHz band in this frequency range 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. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions. (WRC-2000)

5.503A Until 1 January 2000, stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services. After that date, these non-geostationary space stations will operate on a secondary basis in relation to the fixed-satellite service. Additionally, when planning earth stations in the fixed-satellite service to be brought into service between 1 January 2000 and 1 January 2001, in order to accommodate the needs of spaceborne precipitation radars operating in the band 13.793-13.805 GHz, advantage should be taken of the consultation process and the information given in Recommendation ITU-R SA.1071.

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, Kuwait, Lesotho, Nigeria, Oman, 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, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait,

Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-2000)

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 on board vessels, as provided in Resolution **[COM4/20] (WRC-03)**. This footnote shall not apply to ship earth stations for which the complete Appendix 4 information has been received by the Radiocommunication Bureau prior to 5 July 2003. (WRC-03)

5.506B Earth stations 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, Malta, [...], within the minimum distance given in Resolution **[COM4/20] (WRC-03)** from these countries. (WRC-03)

5.508 *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland and Yugoslavia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-2000)

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, Italy, Kuwait, Lesotho, Nigeria, Oman, 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)

5.509 *Additional allocation:* in Japan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-2000)

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, Italy, Kuwait, Lesotho, Morocco, Nigeria, Oman, 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, Kuwait, Lebanon, Libya, Pakistan, Qatar, Syria, Slovenia, Somalia and Yugoslavia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

5.511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful

interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43-15.63 GHz band shall not exceed the level of -156 dB(W/m^2) in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time. (WRC-2000)

5.511B (SUP - WRC-97)

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

5.511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4-15.43 GHz and 15.63-15.7 GHz in the space-to-Earth direction and 15.63-15.65 GHz in the Earth-to-space direction. In the bands 15.4-15.43 GHz and 15.65-15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of -146 dB(W/(m^2 · MHz)) for any angle of arrival. In the band 15.63-15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed -146 dB(W/(m^2 · 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, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Malaysia, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Yemen and Yugoslavia, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

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, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan and Yugoslavia, 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-2000)

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

5.516 The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-

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

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

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

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

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **[COM5/6] (WRC-03)**. (WRC-03)

5.517 In Region 2, the allocation to the broadcasting-satellite service in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. After that date, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.

5.518 *Different category of service:* in Region 2, the allocation of the band 17.7-17.8 GHz to the mobile service is on a primary basis until 31 March 2007.

5.519 *Additional allocation:* the band 18.1-18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article **21**, Table **21-4**.

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, Greece and Slovakia, 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-2000)

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

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

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

5.523 (SUP - WRC-2000)

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

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

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

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

5.523E No. **22.2** shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service

networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)

5.524 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, 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 Dem. Rep. of the Congo, Syria, 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-2000)

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 allocation to the broadcasting-satellite service in the band 21.4-22 GHz shall come into effect on 1 April 2007. The use of this band by the broadcasting-satellite service after that date and on an interim basis prior to that date is subject to the provisions of Resolution **525 (WARC-92)**.

5.531 *Additional allocation:* in Japan, the band 21.4-22 GHz is also allocated to the broadcasting service on a primary basis.

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

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

5.534 *Additional allocation:* in Japan, the band 24.65-25.25 GHz is also allocated to the radionavigation service on a primary basis until 2008.

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 installing Earth exploration-satellite service earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the Earth exploration-satellite service should take into account Recommendation ITU-R SA.1278. (WRC-2000)

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, Jordan, Kenya, Kuwait, Lebanon, Libya, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Syria, 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-97)

5.536C In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Rep. of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, 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, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5-28.35 GHz by HAPS is 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. (WRC-2000)

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. In the band 27.500-27.501 GHz, such space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article **21**, Table **21-4** on the Earth's surface.

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, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, 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-2000)

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, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, 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 high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. **5.545**. The use of HAPS in the band 31-31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the deployment of HAPS in the band 31-31.3 GHz to the lower half of this band (31-31.15 GHz) until WRC-03. (WRC-2000)

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, Azerbaijan, Belarus, Georgia, Mongolia, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-2000)

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, the Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine, 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-2000)

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 Resolutions **75 (WRC-2000)** and **79 (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, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution **84 (WRC-2000)**). (WRC-2000)

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

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

5.547C *Alternative allocation*: in the United States, the band 32-32.3 GHz is allocated to the inter-satellite, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

5.547D *Alternative allocation*: in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. (WRC-97)

5.547E *Alternative allocation*: in the United States, the band 33-33.4 GHz is allocated to the radionavigation service on a primary basis. (WRC-97)

5.548 In designing systems for the inter-satellite and radionavigation services 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**).

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Dem. Rep. of the Congo, Syria, Senegal, 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-97)

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

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, 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-2000)

5.551A In the band 35.5-36.0 GHz, 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 meteorological aids service and other services allocated on a primary basis. (WRC-97)

5.551AA In the bands 37.5-40 GHz and 42-42.5 GHz, non-geostationary-satellite systems in the fixed-satellite service should employ power control or other methods of downlink fade compensation of the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are under study by the ITU-R (see Resolution **84 (WRC-2000)**). (WRC-2000)

5.551G In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density in the 42.5-43.5 GHz band produced by all the space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed -167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station for more that 2% of the time. The power flux-density in the band 42.5-43.5 GHz produced by any geostationary station in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) operating in the band 42-42.5 GHz shall not exceed -167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**. (WRC-2000)

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

-230 dB(W/m^2) in 1 GHz and -246 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

–209 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586 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 the end of WRC-03 and has been notified to ITU 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 **[COM5/7] (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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

–137 dB(W/m^2) in 1 GHz and –153 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and

–116 dB(W/m^2) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

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

– was in operation prior to the end of WRC-03 and has been notified to ITU 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 **[COM5/7] (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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

5.552A The allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution **122 (WRC-97)***. (WRC-97)

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

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

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

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

5.555A The power flux-density in the band 48.94-49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed –151.8 dB(W/m^2) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

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

5.556A Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –147 dB(W/(m^2 · 100 MHz)) for all angles of arrival. (WRC-97)

5.556B *Additional allocation:* in Japan, the band 54.25-55.78 GHz is also allocated to the mobile service on a primary basis for low-density use. (WRC-97)

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

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

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

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

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

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

Appendix D

LIST OF ACRONYMS

AMSS	Aeronautical Mobile Satellite Service
ARNS	Aeronautical Radionavigation Service.
BFWA	Broadband Fixed Wireless Access
B-GAN	Broadband Global Area Network
BRAN	Broadband Access Network
BSS	Broadcast Satellite Service
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.
DME	Distance Measuring Equipment.
DSC	Digital Selective Calling
DSI	Detailed Spectrum Investigation.
DTV	Digital Television

DVB-T	Terrestrial Digital Video Broadcasting
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. ETSI was set up in 1988 by the European Commission and the CEPT to set common telecommunications standards.
FHSS	Frequency Hopping Spread Spectrum
Fixed	Fixed service - a radiocommunication service between specified fixed points.
FM	Frequency Modulation
FSS	Fixed Satellite Service
FTP	File Transfer Protocol
FWA	Fixed Wireless Access
GAUTRAIN	High speed train for Gauteng
GLONASS	Global Navigation Satellite System
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
HF	High Frequency (3 to 30 MHz)
HFBC	High Frequency Broadcasting.
HIPERLAN	High Performance Radio Local Area Networks.
IARU	International Amateur Radio Union
ICAO	International Civil Aviation Organisation
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
IMT-2000	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)

MF	Medium Frequency (300 to 3000 kHz)
Mob-87	World Administrative Radio Conference for the Mobile Services, Geneva, 1987.
Mobile	Mobile service - a radiocommunication service between mobile land stations, or between mobile stations.
MoU	Memorandum of Understanding
MPT	The prefix for the numbering sequence for UK national type approval specifications.
MSS	Mobile Satellite Service
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)
PMR	Private Mobile Radio.
PMSE	Programme Making and Special Events.
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
RR	Radio Regulation of the International Telecommunication Union,

RTT	Road Transport Telematics - developed from DRIVE.
SAB	Services Ancillary to Broadcasting
SABRE	South African Band Replanning Exercise
SAP	Services Ancillary to Programme making
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 –serviced area licencees.
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
WARC	World Administrative Radio Conference. The last WARC was held in 1992. WARCs are now superseded by WRCs.
WLAN	Wireless Local Area Network
WLL	Wireless Local Loop
WRC	World Radiocommunication Conference.

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Publications: Tel: (012) 334-4508, 334-4509, 334-4510
Advertisements: Tel: (012) 334-4673, 334-4674, 334-4504
Subscriptions: Tel: (012) 334-4735, 334-4736, 334-4737
Cape Town Branch: Tel: (021) 465-7531

Gedruk deur en verkrygbaar by die Staatsdrukker, Bosmanstraat, Privaatsak X85, Pretoria, 0001
Publikasies: Tel: (012) 334-4508, 334-4509, 334-4510
Advertensies: Tel: (012) 334-4673, 334-4674, 334-4504
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