RADIO SPECTRUM MANAGEMENT

Table of Radio Spectrum Usage in New Zealand (PIB 21)

Issue 11 | June 2021

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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New Zealand Government

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1. Introduction

New Zealand is a Member State of the International Telecommunication Union (ITU). It is a signatory to the final acts of world radiocommunication conferences held by the ITU and subsequently a signatory to the International Radio Regulations (IRR). The IRR are annexed to the Constitution and Convention of the ITU. The IRR are a United Nations treaty and are the set of international legal documents within which international spectrum management is performed.

The Radiocommunications Act 1989 (The Act), and the Radiocommunications Regulations 2001 (The Regulations) are the relevant pieces of legislation for spectrum management in New Zealand. The Ministry of Business, Innovation and Employment (the Ministry) is the government agency responsible for the management of New Zealand's radio spectrum.

The methods for licensing transmissions in New Zealand are the following:

- Spectrum Licences (made under Management Rights);
- Radio Licences; and
- General User Licences.

An overview of the administrative Radio Licensing regime can be found on the Radio Spectrum Management (RSM) website at www.rsm.govt.nz. Further information pertaining to Management Rights and Spectrum Licences (including the auctioning process) is contained in Radio Spectrum Auctions.

Radio frequency (RF) energy can be generated intentionally or unintentionally by electrical devices. Unintentional radiators and intentional radiators that utilise RF energy for purposes other than communications are not licensed within the framework mentioned above. However, such devices may cause interference to the reception of intentional radiation, and thus an additional framework is necessary to minimise the possibility of interference, or to ensure the Electromagnetic Compatibility (EMC) of all electronic (including radiocommunication) products. Details of New Zealand's EMC framework can be found on the RSM website.

A recognised technique for managing the radio spectrum to minimise interference is by frequency division; that is by dividing the radio spectrum into arbitrary blocks by frequency. This improves the efficiency by placing technically compatible transmissions in adjoining spectrum. These blocks are then allocated to a particular radio service e.g. Broadcasting, Fixed or Mobile services. A tabular form of this division is the essence of the table of frequency allocations.

The table in section 2 indicates significant, but not necessarily exclusive, existing usage within New Zealand of a range of frequencies (i.e. "bands") by various radio services. It is based on the International Radio Regulations Article **5**, section IV, "Table of Frequency Allocations" - particularly where international co-ordination is important such as in the aeronautical, maritime, satellite, navigation, space research, astronomy and amateur services. It should be noted, however, that where spectrum in New Zealand is the subject of privately owned Management Rights, the right holder determines the highest value use of the spectrum.

This document is intended for use by persons of all levels of expertise from persons with a general interest in radio usage and allocation through to the professional radio engineer. It is expected to be used as a resource document for developing policies, recommendations and decisions pertaining to radio spectrum usage in New Zealand. A less detailed overview of the NZ table of radio spectrum allocations is given in the chart "Radio Spectrum Allocations in New Zealand", available at the RSM website.

1.1. Changes

RSM may change, delete or add to or otherwise amend information contained in this PIB from time to time to reflect evolving policies. Changes to this document will be notified through the 'Radio Spectrum Management Business Update' newsletter that is emailed to those who subscribe. The changes are also notified in the News section on the RSM website, www.rsm.govt.nz.

1.2. Disclaimer

The Ministry makes no warranty, express or implied, nor assumes any liability for any loss suffered, whether arising directly, or indirectly, due to the sole reliance on the accuracy or contents of this Public Information Brochure (PIB 21).

1.3. Clarifications and Corrections

RSM will provide clarification of the information contained in this document when requested and would appreciate receiving suggestions for its improvement or advice relating to inaccuracies or ambiguities. Such matters may be emailed to radio.spectrum@mbie.govt.nz. Correspondence received will be acknowledged, investigated and appropriate action taken.

1.4. Abbreviations and definitions

The following table gives a list of the abbreviations and/or acronyms and associated meanings used in the New Zealand table of allocations (section 2.3):

Abbreviation	Definition
(OR)	Off-route, used in conjunction with Aeronautical Mobile Service
(R)	Route, used in conjunction with Aeronautical Mobile Service
ADS-B	Automatic Dependent Surveillance - Broadcast
AM	Amplitude Modulation
CT	Cordless Telephone
DECT	Digital Enhanced Cordless Telecommunications
DSC	Distress and Safety Calling
ELT	Emergency Location Transmitter
EPIRB	Emergency Position Indicating Radio Beacon
FM	Frequency Modulation
FWA	Fixed Wireless Access
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
ILS	Instrument Landing System
IMT	International Mobile Telecommunications
IRR	International Radio Regulations
ISM	Industrial, Scientific, and Medical
ITU	International Telecommunications Union
LMDS	Local Multipoint Distribution Service
MLS	Microwave Landing System
MR #	Management Right (the # signifies an integer identification number)

Abbreviation	Definition
NDB	Non-Directional Beacon
PHS	Personal Handyphone System
PIB	Public Information Brochure
PLB	Personal Locator Beacon
PRS	Personal Radio Service
PSR	Primary Surveillance Radar
RADAR	Radio Detection and Ranging
RLAN	Radio Local Area Network
SART	Search and Rescue Transponder
SRD	Short Range Device
SSR	Secondary Surveillance Radar
STL	Studio-to-Transmitter Link
TVWS	Television White Space
VOR	VHF Omni-Range

2. The New Zealand Allocations

2.1. How to use the Table

The New Zealand Table of Allocations has been designed to be used in both electronic and printed formats.

The table is divided into 5 columns, and generally is to be read from left to right. The first two columns are reproduced from Article 5 of the International Radio Regulations.

1	2	3	4	5
Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies

The first column indicates the frequency range that entries in the other columns relate to.

The second column shows the International Radio Regulations Region 3 radio service allocations, with reference to associated footnotes that are included in section 2.4 of this document.

The third column of the table shows the specific New Zealand allocation(s) adopted from the ITU Region 3 allocations.

The fourth column summarises the service usage in New Zealand and may include more specific information related to the allocation.

The fifth column lists any relevant references, standards, licensing arrangements or policies that pertain to use of the associated band in New Zealand. The Ministry publishes, amongst other documents; specifications pertaining to the minimum performance characteristics of radio equipment standards (RFS) and public information brochures (PIBs) pertaining to the use of equipment and/or frequency bands. These reference documents are available on the RSM website at www.rsm.govt.nz.

Table entries with a shaded background indicate bands managed (either by the Crown or private band managers) under the Management Rights Regime.

2.2. Terminology and Nomenclature

The following section is dedicated to explanations of the terminology, nomenclature and abbreviations used in this document.

2.2.1. Frequency Bands

Article **2** of the IRR states that the radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table:

Band number	Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Band Description
4	VLF	3 to 30 kHz	Very Low Frequency
5	LF	30 to 300 kHz	Low Frequency
6	MF	300 to 3 000 kHz	Medium Frequency
7	HF	3 to 30 MHz	High Frequency
8	VHF	30 to 300 MHz	Very High Frequency
9	UHF	300 to 3 000 MHz	Ultra High Frequency
10	SHF	3 to 30 GHz	Super High Frequency
11	EHF	30 to 300 GHz	Extra High Frequency
12		300 to 3 000 GHz	Infrared

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

2.2.2. Primary and Secondary Services

There are two classes of allocation shown in the following Table of Allocations. Where the status of the allocation is "PRIMARY", the service to which it applies is printed in upper case characters in columns 2 and 3. Where the status of the allocation is "Secondary", the service is printed in lower case characters (except the first letter) in columns 2 and 3. The formal definitions from Article **5** of the IRR are as follows:

5.24 1) Where a band is indicated as allocated to more than one service, either on a worldwide or regional basis, such services are listed in the following order:

5.25 a) services the names of which are printed in "capitals" (example: FIXED) are called "primary" services;

5.26 b) services the names of which are printed in "normal characters" (example: Mobile) are called "secondary" services (see Nos. **5.28** to **5.31**).

5.27 2) Additional remarks shall be printed in normal characters (example: MOBILE except aeronautical mobile).

5.28 3) Stations of a secondary service:

5.29 a) shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

5.30 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;

5.31 c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

5.32 4) Where a band is indicated in a footnote of the Table as allocated to a service "on a secondary basis" in an area smaller than a Region, or in a particular country, this is a secondary service (see Nos. **5.28** to **5.31**).

5.33 5) Where a band is indicated in a footnote of the Table as allocated to a service "on a primary basis", in an area smaller than a Region, or in a particular country, this is a primary service only in that area or country.

2.2.3. Variation to IRR

Article **4** of the IRR outlines the responsibility of Member States in assigning frequencies. In particular, No. **4.4** of the IRR as quoted below grants an exemption from the frequency allocations in Article **5** provided that any new assignment does not cause harmful interference to services rendered by the stations of another country, and should not claim protection from any harmful interference it may receive.

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

2.3. New Zealand Table of Allocations

2.3.1. VLF and LF Bands (3 - 300 kHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
Below 8.3 kHz	Not allocated 5.53 5.54	UNALLOCATED	Research of VLF propagation	
8.3-9 kHz	METEROLOGICAL AIDS 5.54A 5.54C	UNALLOCATED		
9-11.3 kHz	METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	9-19.95 kHz FIXED Mobile (International Radio Regulations 4.4)	9-205 kHz Short Range Devices – limited to determination, telemetry and telecommand usage, as well as wireless power transfer applications	General User Radio Licence for Short Range Devices
11.3-14 kHz	RADIONAVIGATION			
14-19.95 kHz	FIXED MARITIME MOBILE 5.57			
19.95-20.05 kHz	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)	STANDARD FREQUENCY AND TIME SIGNAL		
20.05-70 kHz	FIXED MARITIME MOBILE 5.57 5.58	20.05-90 kHz FIXED Mobile (International Radio Regulations 4.4)		
70-72 kHz	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.57 5.59			
72-84 kHz	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60			
84-86 kHz	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.57 5.59			
86-90 kHz	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
90-110 kHz	RADIONAVIGATION 5.62 Fixed 5.64	90-190 kHz FIXED Amateur (International Radio Regulations 4.4) Mobile (International Radio Regulations 4.4)	9-205 kHz Short Range Devices – limited to determination, telemetry and telecommand usage, as well as wireless power transfer applications 130-190 kHz Amateur usage – on a temporary basis until further notice	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators
110-112 kHz	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64			
112-117.6 kHz	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.65			
117.6-126 kHz	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64			
126-129 kHz	RADIONAVIGATION 5.60 Fixed Maritime mobile 5.64 5.65			
129-130 kHz	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64			
130-135.7 kHz	FIXED MARITIME MOBILE RADIONAVIGATION 5.64			
135.7-137.8 kHz	FIXED MARITIME MOBILE RADIONAVIGATION Amateur 5.67A 5.64 5.67B			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
137.8-160 kHz	FIXED MARITIME MOBILE RADIONAVIGATION 5.64	(Continued) 90-190 kHz FIXED Amateur (International Radio Regulations 4.4) Mobile (International Radio Regulations 4.4)	(Continued) 9-205 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications 130-190 kHz Amateur usage – on a temporary basis until further notice	(Continued) General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators
160-190 kHz	FIXED Aeronautical radionavigation			
190-200 kHz	AERONAUTICAL RADIONAVIGATION	190-325 kHz AERONAUTICAL RADIONAVIGATION	9-205 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications Aeronautical Non-Directional Beacons 315-430 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications	General User Radio Licence for Short Range Devices
200-285 kHz	AERONAUTICAL RADIONAVIGATION Aeronautical mobile			
285-325 kHz	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73			

2.3.2. MF Band (300 - 3 000 kHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
325-405 kHz	AERONAUTICAL RADIONAVIGATION Aeronautical mobile	325-405 kHz AERONAUTICAL RADIONAVIGATION	Aeronautical Non-Directional Beacons 315-430 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications	General User Radio Licence for Short Range Devices
405-415 kHz	RADIONAVIGATION 5.76 Aeronautical mobile	RADIONAVIGATION	Radiobeacons 315-430 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications	General User Radio Licence for Short Range Devices
415-472 kHz	MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.80 5.78 5.82	MARITIME MOBILE	315-430 kHz Short Range Devices – limited to determination, telemetry and telecommand, as well as wireless power transfer applications 415-521 kHz Government mobile services 457 kHz Avalanche beacons 472-479 kHz Amateur usage	General User Radio Licence for Short Range Devices General User Radio Licence for Emergency Transmitters General User Radio Licence for Amateur Radio Operators
472-479 kHz	MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.77 5.80 5.80B 5.82	MARITIME MOBILE Amateur		
479-495 kHz	MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.80 5.82	415-521 kHz MARITIME MOBILE		
495-505 kHz	MOBILE			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
505-526.5 kHz	MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile			
(Continued) 505-526.5 kHz	(Continued) MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile	521-1 612 kHz BROADCASTING	521-1 612 kHz Spectrum licences for MF-AM Sound Broadcasting under Crown Management Right (MR206)	Radio Spectrum Auctions PIB 59: Policy rules for Crown Spectrum Management Rights
526.5-535 kHz	BROADCASTING Mobile 5.88			
535-1 606.5 kHz	BROADCASTING			
1 606.5-1 800 kHz	FIXED MOBILE RADIOLOCATION RADIONAVIGATION 5.91	1 612-1 690 kHz RADIONAVIGATION	Aeronautical Non-Directional Beacons	PIB 58: Radio Licence Policy Rules
		1 690-1 800 kHz FIXED MOBILE	CT1 Cordless Telephone base stations Maritime Radio Buoys Government land & maritime mobile services	General User Radio Licence for Cordless Telephones General User Radio Licence for Maritime Purposes

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 800-2 000 kHz	AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation 5.97	AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation	Amateur 160m band Maritime Radio Buoys Government maritime mobile services	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Maritime Purposes PIB 58: Radio Licence Policy Rules
2 000-2 065 kHz	FIXED MOBILE	FIXED MOBILE	Maritime mobile Land mobile	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
2 065-2 107 kHz	MARITIME MOBILE 5.106	MARITIME MOBILE	Maritime mobile	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
2 107-2 170 kHz	FIXED MOBILE	FIXED MOBILE	Maritime mobile - coast stations Government land mobile services	
2 170-2 173.5 kHz	MARITIME MOBILE	MARITIME MOBILE	Guard band for 2 182 kHz	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 173.5-2 190.5 kHz	MOBILE (distress and calling) 5.108 5.109 5.110 5.111	MOBILE	2 187.5 kHz Survival Craft Radiotelephone Transmission 2 182 kHz International Distress, Safety and Calling	General User Radio Licence for Emergency Transmitters General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices International Radio Regulations Appendix 15
2 190.5-2 194 kHz	MARITIME MOBILE	MARITIME MOBILE	Guard band for 2 182 kHz	
2 194-2 300 kHz	FIXED MOBILE 5.112	FIXED MOBILE	Fixed, land mobile and maritime mobile	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
2 300-2 495 kHz	FIXED MOBILE BROADCASTING 5.113	FIXED MOBILE	Land and maritime mobile	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices
2 495-2 501 kHz	STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	2 495-2 505 kHz STANDARD FREQUENCY AND		General User Radio Licence for Short Range

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 501-2 502 kHz	STANDARD FREQUENCY AND TIME SIGNAL Space Research	TIME SIGNAL		Devices
2 502-2 505 kHz	STANDARD FREQUENCY AND TIME SIGNAL			
2 505-2 850 kHz	FIXED MOBILE	MOBILE	Land, maritime and aeronautical mobile	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
2 850-3 025 kHz	AERONAUTICAL MOBILE (R) 5.111 5.115	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route 3 023 kHz Aeronautical stations may be employed for co-ordinated search and rescue operations with the maritime mobile service	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27

2.3.3. HF Band (3 - 30 MHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
3 025-3 155 kHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices International Radio Regulations Appendix 26
3 155-3 200 kHz	FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	3 155-3 400 kHz FIXED MOBILE except aeronautical mobile (R)	Fixed and land mobile 3 155-3 400 kHz Short Range Devices - limited to auditory aids	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
3 200-3 230 kHz	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116			
3 230-3 400 kHz	FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118			
3 400-3 500 kHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes International Radio Regulations Appendix 27

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
3 500-3 900 kHz	AMATEUR FIXED MOBILE	AMATEUR MOBILE	Amateur 80m Band 3 640-4 040 kHz Short Range Devices - limited to auditory aids	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
3 900-3 950 kHz	AERONAUTICAL MOBILE BROADCASTING	AERONAUTICAL MOBILE	Government land and aeronautical mobile services 3 640-4 040 kHz Short Range Devices - limited to auditory aids	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
3 950-4 000 kHz	FIXED BROADCASTING 5.126	FIXED	Government fixed and aeronautical mobile services 3 640-4 040 kHz Short Range Devices - limited to auditory aids	
4 000-4 063 kHz	FIXED MARITIME MOBILE 5.127 5.126	FIXED MARITIME MOBILE	Government fixed services Maritime mobile (ship stations only) 3 640-4 040 kHz Short Range Devices - limited to auditory aids	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
4 063-4 438 kHz	MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	MARITIME MOBILE	Maritime mobile (ship and coast stations) 4 125 kHz distress, safety and calling Guard band for 4 125 kHz	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
4 438-4 448 kHz	FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	4 438-4 650 kHz FIXED MOBILE	Fixed and mobile services within New Zealand and at off-shore locations	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
4 448-4 650 kHz	FIXED MOBILE except aeronautical mobile			
4 650-4 700 kHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
4 700-4 750 kHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
4 750-4 850 kHz	FIXED BROADCASTING 5.113 Land mobile	FIXED Land Mobile	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
4 850-4 995 kHz	FIXED LAND MOBILE BROADCASTING 5.113	FIXED LAND MOBILE	Government fixed services Land mobile	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
4 995-5 003 kHz	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	4 995-5 005 kHz STANDARD FREQUENCY AND TIME SIGNAL		General User Radio Licence for Short Range Devices
5 003-5 005 kHz	STANDARD FREQUENCY AND TIME SIGNAL Space research			
5 005-5 060 kHz	FIXED BROADCASTING 5.113	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 060-5 250 kHz	FIXED Mobile except aeronautical mobile 5.113	FIXED Land Mobile	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
5 250-5 275 kHz	FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	FIXED MOBILE	Government fixed services Land mobile	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
5 275-5 351.5 kHz	FIXED MOBILE except aeronautical mobile	5 275-5 450 kHz FIXED MOBILE Aeronautical mobile (International Radio Regulations 4.4)	Fixed and land mobile in conjunction with Aeronautical mobile services Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
5 351.5-5 366.5 kHz	FIXED MOBILE except aeronautical mobile Amateur 5.133B			
5 366.5-5 450 kHz	FIXED MOBILE except aeronautical mobile			
5 450-5 480 kHz	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	Government fixed services Aeronautical and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 480-5 680 kHz	AERONAUTICAL MOBILE (R) 5.111 5.115	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
5 680-5 730 kHz	AERONAUTICAL MOBILE (OR) 5.111 5.115	AERONAUTICAL MOBILE (OR)	Aeronautical mobile off-route 5 680 kHz Aeronautical stations may be employed for co-ordinated search and rescue operations with the maritime mobile service including coast stations Land mobile	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
5 730-5 900 kHz	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)	Government fixed and land mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 900-5 950 kHz	BROADCASTING 5.134 5.136	BROADCASTING FIXED 5.136	Radio New Zealand HF Sound Broadcasting to the Pacific Islands Government fixed services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
5 950-6 200 kHz	BROADCASTING	BROADCASTING	Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
6 200-6 525 kHz	MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	MARITIME MOBILE	Maritime mobile (ship and coast stations) 6 215 kHz distress, safety and calling	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
6 525-6 685 kHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
6 685-6 765 kHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical mobile services Land mobile	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
6 765-7 000 kHz	FIXED MOBILE except aeronautical mobile (R) 5.138	FIXED Mobile	6 765-6 795 kHz Short Range Devices 6 765-6 795 kHz Industrial, scientific and medical band Government fixed and land mobile services 6 911.4 kHz Search and Rescue	General User Radio Licence for Short Range Devices General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
7 000-7 100 kHz	AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	AMATEUR AMATEUR-SATELLITE	7 000-7 300 kHz Amateur 40m Band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
7 100-7 200 kHz	AMATEUR 5.141A 5.141B	AMATEUR FIXED 5.141B MOBILE 5.141B	7 000-7 300 kHz Amateur 40m Band Government fixed and land mobile services	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
7 200-7 300 kHz	BROADCASTING	BROADCASTING Amateur	7 000-7 300 kHz Amateur 40m Band Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
7 300-7 400 kHz	BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	BROADCASTING FIXED 5.143 5.143A Land mobile 5.143 5.143A	Radio New Zealand HF sound broadcasting to the Pacific Islands Government fixed and land mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
7 400-7 450 kHz	BROADCASTING 5.143A 5.143C	BROADCASTING FIXED 5.143A Land Mobile 5.143A	Radio New Zealand HF sound broadcasting to the Pacific Islands Government fixed services Land mobile 7 400-8 800 kHz Short Range Devices - limited to inductive systems	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
7 450-8 100 kHz	FIXED MOBILE except aeronautical mobile (R) 5.144	FIXED MOBILE except aeronautical mobile (R)	Government fixed and land mobile services for national and international coverage within the South Pacific and sub-Antarctic Islands 7 400-8 800 kHz Short Range Devices - limited to inductive systems	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
8 100-8 195 kHz	FIXED MARITIME MOBILE	8 100-8 815 kHz MARITIME MOBILE	Maritime mobile (ship and coast stations) 8 291 kHz International distress, safety and calling 8 414.5 kHz Survival Craft Radiotelephone Transmitters 7 400-8 800 kHz Short Range Devices - limited to inductive systems	General User Radio Licence for Maritime Purposes General User Radio Licence for Emergency Transmitters General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
8 195-8 815 kHz	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
8 815-8 965 kHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
8 965-9 040 kHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical services Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
9 040-9 305 kHz	FIXED	9 040-9 400 kHz FIXED	Government fixed and land mobile services for national and international coverage within the South Pacific and sub-Antarctic Islands	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
9 305-9 355 kHz	FIXED Radiolocation 5.145A			
9 355-9 400 kHz	FIXED			
9 400-9 500 kHz	BROADCASTING 5.134 5.146	9 400-9 900 kHz BROADCASTING Fixed 5.146 5.147 Aeronautical Mobile (OR) (International Radio Regulations 4.4)	Radio New Zealand HF sound broadcasting to the Pacific Islands Government fixed services Aeronautical mobile off-route	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
9 500-9 900 kHz	BROADCASTING 5.147			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
9 900-9 995 kHz	FIXED	FIXED	Government fixed and land mobile services for national and international coverage within the South Pacific and sub-Antarctic Islands	PIB 58: Radio Licence Policy Rules
9 995-10 003 kHz	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	9 995-10 005 kHz STANDARD FREQUENCY AND TIME SIGNAL		General User Radio Licence for Short Range Devices
10.003-10.005 MHz	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111			
10.005-10.100 MHz	AERONAUTICAL MOBILE (R) 5.111	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
10.100-10.150 MHz	FIXED Amateur	FIXED Amateur	Amateur 30m Band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
10.150-11.175 MHz	FIXED Mobile except aeronautical mobile (R)	FIXED	Government fixed services for both national and international coverage 10.44-10.76 MHz Short Range Devices - limited to auditory aids	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
11.175-11.275 MHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical services Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
11.275-11.400 MHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
11.400-11.600 MHz	FIXED	11.400-11.650 MHz	Government fixed and	General User Radio

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
11.600-11.650 MHz	BROADCASTING 5.134 5.146	FIXED 5.146	aeronautical services	Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
11.650-12.050 MHz	BROADCASTING 5.147	BROADCASTING	Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Short Range Devices
12.050-12.100 MHz	BROADCASTING 5.134 5.146	FIXED 5.146 Aeronautical mobile (OR) (International Radio Regulations 4.4)	Government fixed and aeronautical mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
12.100-12.230 MHz	FIXED	FIXED		
12.230-13.200 MHz	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE	Maritime mobile (ship and coast stations) 12.290 MHz International distress, safety and calling	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
13.200-13.260 MHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical services Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
13.260-13.360 MHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
13.360-13.410 MHz	FIXED RADIO ASTRONOMY 5.149	FIXED Aeronautical mobile (OR) (International Radio Regulations 4.4)	Government fixed and aeronautical mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
13.410-13.450 MHz	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)	Government fixed services Land mobile	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
13.450-13.550 MHz	FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	FIXED Mobile except aeronautical mobile (R)	Government fixed services Land mobile	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
13.550-13.570 MHz	FIXED Mobile except aeronautical mobile (R) 5.150	FIXED Mobile	Government fixed and land mobile services Aeronautical mobile off-route 13.553-13.567 MHz Short Range Devices 13.553-13.567 MHz Industrial, scientific and medical band	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
13.570-13.600 MHz	BROADCASTING 5.134 5.151	13.570-13.870 MHz BROADCASTING	Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Short Range Devices
13.600-13.800 MHz	BROADCASTING			
13.800-13.870 MHz	BROADCASTING 5.134 5.151			
13.870-14.000 MHz	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)	Fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
14.000-14.250 MHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	14-14.35 MHz Amateur 20m	General User Radio Licence for Amateur

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
14.250-14.350 MHz	AMATEUR 5.152	AMATEUR	Band	Radio Operators General User Radio Licence for Short Range Devices
14.350-14.990 MHz	FIXED Mobile except aeronautical mobile (R)	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
14.990-15.005 MHz	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	14.990-15.010 MHz STANDARD FREQUENCY AND TIME SIGNAL		General User Radio Licence for Short Range Devices
15.005-15.010 MHz	STANDARD FREQUENCY AND TIME SIGNAL Space research			
15.010-15.100 MHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical services Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
15.100-15.600 MHz	BROADCASTING	BROADCASTING	Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
15.600-15.800 MHz	BROADCASTING 5.134 5.146	BROADCASTING FIXED 5.146 Aeronautical mobile (OR) (International Radio Regulations 4.4)	Government fixed and aeronautical services Radio New Zealand HF sound broadcasting to the Pacific Islands	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
15.800-16.100 MHz	FIXED 5.153	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
16.100-16.200 MHz	FIXED Radiolocation 5.145A	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
16.200-16.360 MHz	FIXED	FIXED Mobile (International Radio Regulations 4.4)	Land mobile Aeronautical mobile off-route	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
16.360-17.410 MHz	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE	Maritime mobile and coast stations 16.420 MHz International distress, safety and calling	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
17.410-17.480 MHz	FIXED	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
17.480-17.550 MHz	BROADCASTING 5.134 5.146	17.480-17.900 MHz BROADCASTING FIXED 5.146	Government fixed services Radio New Zealand HF sound broadcasting to the Pacific Islands	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
17.550-17.900 MHz	BROADCASTING			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
17.900-17.970 MHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
17.970-18.030 MHz	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)	Government aeronautical services Aeronautical mobile off-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 26
18.030-18.052 MHz	FIXED	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
18.052-18.068 MHz	FIXED Space research	FIXED		General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
18.068-18.168 MHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	Amateur 17m Band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
18.168-18.780 MHz	FIXED Mobile except aeronautical mobile	FIXED Mobile	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
18.780-18.900 MHz	MARITIME MOBILE	MARITIME MOBILE	Maritime mobile (ship stations only)	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices International Radio Regulations Appendix 17
18.900-19.020 MHz	BROADCASTING 5.134 5.146	BROADCASTING	Radio New Zealand HF sound broadcasting to the Pacific Islands	General User Radio Licence for Short Range Devices
19.020-19.680 MHz	FIXED	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
19.680-19.800 MHz	MARITIME MOBILE 5.132	MARITIME MOBILE	Maritime mobile coast stations	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices International Radio Regulations Appendix 17
19.800-19.990 MHz	FIXED	FIXED	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
19.990-19.995 MHz	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	19.990-20.010 MHz STANDARD FREQUENCY AND TIME SIGNAL		General User Radio Licence for Short Range Devices
19.995-20.010 MHz	STANDARD FREQUENCY AND TIME SIGNAL (20.000 MHz) 5.111			
20.010-21.000 MHz	FIXED Mobile	FIXED	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
21.000-21.450 MHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	Amateur 15m Band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
21.450-21.850 MHz	BROADCASTING	BROADCASTING Fixed (International Radio Regulations 4.4)	Government fixed services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
21.850-21.870 MHz	FIXED 5.155A 5.155	FIXED		
21.870-21.924 MHz	FIXED 5.155B	FIXED		
21.924-22.000 MHz	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)	Aeronautical mobile on-route	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 27
22.000-22.855 MHz	MARITIME MOBILE 5.132 5.156	MARITIME MOBILE	Maritime mobile (ship and coast stations)	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
22.855-23.000 MHz	FIXED 5.156	22.855-23.200 MHz FIXED	Government fixed services	General User Radio Licence for Short Range

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
23.000-23.200 MHz	FIXED Mobile except aeronautical mobile (R) 5.156			Devices PIB 58: Radio Licence Policy Rules
23.200-23.350 MHz	FIXED 5.156A AERONAUTICAL MOBILE (OR)	FIXED AERONAUTICAL MOBILE (OR)	Government fixed and aeronautical mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
23.350-24.000 MHz	FIXED MOBILE except aeronautical mobile 5.157	FIXED	Government fixed services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
24.000-24.450 MHz	FIXED LAND MOBILE	FIXED LAND MOBILE	Government fixed and land mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
24.450-24.600 MHz	FIXED LAND MOBILE Radiolocation 5.132A	FIXED LAND MOBILE		
24.600-24.890 MHz	FIXED LAND MOBILE	FIXED LAND MOBILE		
24.890-24.990 MHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	Amateur 12m band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
24.990-25.005 MHz	STANDARD FREQUENCY AND TIME SIGNAL (25.000 MHz)	24.990-25.010 MHz STANDARD FREQUENCY AND TIME SIGNAL		General User Radio Licence for Short Range Devices
25.005-25.010 MHz	STANDARD FREQUENCY AND TIME SIGNAL Space research			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
25.010-25.070 MHz	FIXED MOBILE except aeronautical mobile	FIXED MOBILE	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
25.070-25.210 MHz	MARITIME MOBILE	MARITIME MOBILE	Maritime mobile (ship and coast stations)	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 17
25.210-25.550 MHz	FIXED MOBILE except aeronautical mobile	FIXED MOBILE	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
25.550-25.670 MHz	RADIO ASTRONOMY 5.149	FIXED (International Radio Regulations 4.4)	Government fixed services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
25.670-26.100 MHz	BROADCASTING	BROADCASTING		General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
26.100-26.175 MHz	MARITIME MOBILE 5.132	MARITIME MOBILE		International Radio Regulations Appendix 17 General User Radio Licence for Short Range Devices
26.175-26.200 MHz	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile	26.175-26.225 MHz Meteorological Aids (auroral radar)	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
26.200-26.350 MHz	FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	FIXED MOBILE except aeronautical mobile Radiolocation	26.175-26.225 MHz Meteorological Aids (auroral radar) 26.325–27.410 MHz Citizen Band "CB" radio service	General User Radio Licence for Short Range Devices General User Radio Licence for Citizen Band Radio PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
26.350-27.500 MHz	FIXED MOBILE except aeronautical mobile 5.150	FIXED MOBILE except aeronautical mobile	26.325–27.410 MHz Citizen Band "CB" radio service 26.950-27.300 MHz “Radio Paging” band – Local area paging 26.957-27.283 MHz Industrial, scientific and medical band 26.950-27.300 MHz Short Range Devices 26.950-27.300 MHz Aeronautical model control 26.950-27.300 MHz Amateur usage	General User Radio Licence for Citizen Band Radio General User Radio Licence for Short Range Devices General User Radio Licence for Aeronautical Model Control Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
27.500-28.000 MHz	METEOROLOGICAL AIDS FIXED MOBILE	FIXED MOBILE	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices
28.000-29.700 MHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	Amateur 10m Band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
29.700-30.005 MHz	FIXED MOBILE	FIXED MOBILE	29.7-30.0 MHz Short Range Devices 29.7-30.0 MHz Aeronautical model control 29.8-30.0 MHz "Telemetry and Telecommand" band Government fixed and land mobile services	General User Radio Licence for Short Range Devices General User Radio Licence for Aeronautical Model Control Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules

2.3.4. VHF Band (30 - 300 MHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
30.005-30.01 MHz	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	UNALLOCATED		
30.01-37.5 MHz	FIXED MOBILE	FIXED MOBILE	Government fixed and land mobile services 30.05-30.8 MHz Cordless Telephone "CT1 Band" – base transmit 30.8-31.5 MHz Short Range Devices – limited to model control usage 31.3-31.6 MHz "Radio Paging" band - Local area paging 31.5-32 MHz Aeronautical model control 36-36.6 MHz "Telemetry and Telecommand" band 35-37 MHz Aeronautical model control 35.5-37.2 MHz Short Range Devices	General User Radio Licence for Cordless Telephones General User Radio Licence for Short Range Devices General User Radio Licence for Aeronautical Model Control Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
37.50-38.25 MHz	FIXED MOBILE Radio astronomy 5.149	FIXED MOBILE	Government fixed and land mobile services	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
38.25-39.50 MHz	FIXED MOBILE	38.25-42 MHz FIXED MOBILE	Government fixed and land mobile services 39-39.7 MHz Aeronautical model control 39.7-40.5 MHz Cordless Telephone "CT1 Band" – mobile transmit 40.5-40.66 MHz Aeronautical model control 40.66-40.7 MHz Industrial, scientific and medical band 40.66-40.7 MHz Short Range Devices 40.7-41 MHz Aeronautical model control 40.8-41 MHz Short Range Devices	General User Radio Licence for Aeronautical Model Control Short Range Devices General User Radio Licence for Cordless Telephones General User Radio Licence for Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
39.5-39.986 MHz	FIXED MOBILE RADIOLOCATION 5.132A			
39.986-40.000 MHz	FIXED MOBILE RADIOLOCATION 5.132A Space research			
40.000-40.020 MHz	FIXED MOBILE Space Research			
40.020-40.980 MHz	FIXED MOBILE 5.150			
40.98-41.015 MHz	FIXED MOBILE Space research 5.160 5.161			
41.015-42 MHz	FIXED MOBILE 5.160 5.161 5.161A			
42-42.5 MHz	FIXED MOBILE 5.161	FIXED MOBILE	Government fixed and land mobile services Meteorological aids	PIB 58: Radio Licence Policy Rules
42.5-44 MHz	FIXED MOBILE 5.160 5.161 5.161A	FIXED MOBILE	Government fixed and land mobile services Meteorological aids	PIB 58: Radio Licence Policy Rules
44-47 MHz	FIXED MOBILE 5.162 5.162A	FIXED MOBILE	44-50 MHz Future usage dependent on Government decisions	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
47-50 MHz	FIXED MOBILE BROADCASTING 5.162A	FIXED MOBILE	44-50 MHz Future usage dependent on Government decisions 49.82-49.98 MHz Short Range Devices	General User Radio Licence for Short Range Devices
50-54 MHz	AMATEUR 5.162A 5.167 5.167A 5.168 5.170	50-51 MHz AMATEUR	50-51 MHz Amateur usage	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
		51-54 MHz AMATEUR FIXED 5.170 MOBILE 5.170	51-54 MHz Amateur 6m band 53-54 MHz Government fixed and land mobile services	
54-68 MHz	FIXED MOBILE BROADCASTING 5.162A	FIXED MOBILE	54-68 MHz Future usage dependent on Government decisions	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
68-74.8 MHz	FIXED MOBILE 5.149 5.176 5.179	FIXED MOBILE	Government fixed and land mobile services Land mobile 72-72.25 MHz Short Range Devices – limited to auditory aids usage 72.25-72.5 MHz Short Range Devices 72-72.8 MHz Aeronautical model control 72.75-73 MHz Cordless Telephone "CT1 Band" – mobile transmit	General User Radio Licence for Short Range Devices General User Radio Licence for Aeronautical Model Control Short Range Devices General User Radio Licence for Cordless Telephones PIB 58: Radio Licence Policy Rules
74.8-75.2 MHz	AERONAUTICAL RADIONAVIGATION 5.180 5.181	AERONAUTICAL RADIONAVIGATION		
75.2-75.4 MHz	FIXED MOBILE 5.179	75.2-87 MHz MOBILE	75.2-77.1 MHz Land mobile "ESA" band – base transmit 77.1-78.1 MHz Land mobile "ESA" band – simplex 78.1-80 MHz Land mobile "ESA" band – mobile transmit 81-83.5 MHz Land mobile "A" band – base transmit 84-85 MHz Land mobile "A" band – simplex	PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
75.4-87.0 MHz	FIXED MOBILE 5.182 5.183 5.188			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
87-100 MHz	FIXED MOBILE BROADCASTING	FIXED MOBILE BROADCASTING	85-87.46 MHz Land mobile "A" band – mobile transmit 87.5-88.4 MHz Low power FM sound broadcasting 87.5-108 MHz Short Range Devices – limited to audio senders	General User Radio Licence for Low Power FM Broadcasting General User Radio Licence for Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
100-108 MHz	BROADCASTING 5.192 5.194	BROADCASTING	88.4-106.63 MHz Spectrum Licences for FM Sound broadcasting under Crown Management Right (MR207) 88.4-106.63 MHz Tunnel Radio FM Systems	Radio Spectrum Auctions General User Spectrum Licence for Tunnel Radio FM Systems PIB 59: Policy rules for Crown Spectrum Management Rights
			87.5-108 MHz Short Range Devices – limited to audio senders 106.7-107.7 MHz Low power FM sound broadcasting 107-108 MHz Short Range Devices	General User Radio Licence for Short Range Devices General User Radio Licence for Low Power FM Broadcasting
108-117.975 MHz	AERONAUTICAL RADIONAVIGATION 5.197 5.197A	AERONAUTICAL RADIONAVIGATION	108-112 MHz Instrument Landing System – localisers 112-117.975 MHz VOR & Doppler VOR aeronautical beacons	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
117.975-137 MHz	AERONAUTICAL MOBILE (R) 5.111 5.200 5.201 5.202	AERONAUTICAL MOBILE (R)	117.975-130 MHz Aeronautical mobile on-route 121.5 MHz Distress beacons – Emergency Position-Indicating Radio Beacons 122.0 MHz Distress beacons – test and training frequency 123.1 MHz Low power search and rescue transceivers 130-136 MHz Aeronautical mobile off-route 132-132.6 MHz Aeronautical repeaters – base transmit 134.15 MHz Distress Beacons (supplementary frequency) 135.4-136 MHz Aeronautical repeaters – mobile transmit 136-137 MHz Aeronautical VHF data link	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Emergency Transmitters PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
137-137.025 MHz	SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137-138 MHz MOBILE-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile	137-138 MHz Government service usage 137-138 MHz Mobile satellite service – downlink	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
137.025-137.175 MHz	SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208	(Continued) 137-138 MHz MOBILE-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile	(Continued) 137-138 MHz Government service usage 137-138 MHz Mobile satellite service – downlink	(Continued) PIB 58: Radio Licence Policy Rules
137.175-137.825 MHz	SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208			
137.825-138 MHz	SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
138-143.6 MHz	FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	138-144 MHz MOBILE	138-140.5 MHz Land mobile "ESB" band – mobile transmit 140.5-141 MHz Land mobile "ESB" band – simplex 141-143.5 MHz Land mobile "ESB" band – base transmit 143.5-144 MHz Land mobile "ESB" band – simplex	PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
143.6-143.65 MHz	FIXED MOBILE SPACE RESEARCH(space-to-Earth) 5.207 5.213			
143.65-144 MHz	FIXED MOBILE Space research (space-to-Earth) 5.207 5.213			
144-146 MHz	AMATEUR AMATEUR-SATELLITE 5.216	AMATEUR AMATEUR SATELLITE	144-148 MHz Amateur 2m band 144-148 MHz Government service usage	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
146-148 MHz	AMATEUR FIXED MOBILE 5.217	AMATEUR		
148-149.9 MHz	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221	MOBILE 5.221 MOBILE-SATELLITE (Earth-to-space)	Government and local government civil defence land mobile services 148-150.05 MHz Mobile satellite service – uplink	General User Radio Licence for Satellite Services PIB 58: Radio Licence Policy Rules
149.9-150.05 MHz	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space)	148-150.05 MHz Mobile satellite service – uplink	General User Radio Licence for Satellite Services
150.05-154 MHz	FIXED MOBILE 5.225	150.050-156.4875 MHz MOBILE	150-151 MHz Land mobile "E" band – simplex	General User Radio Licence for Maritime

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
154-156.4875 MHz	FIXED MOBILE 5.225A 5.226		151-153.4 MHz Land mobile "E" band – base transmit 153.4-153.6 MHz Land mobile "E" band – simplex 153.6-156 MHz Land mobile "E" band – mobile transmit 156-157.5 MHz Maritime mobile VHF band 156.525 MHz International distress, safety and calling – using digital selective calling 156-156.9 MHz Survival Craft Radiotelephone Transmission 156.8 MHz International distress, safety and calling	Purposes General User Radio Licence for Emergency Transmitters PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 18
156.4875-156.5625 MHz	MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	156.4875-156.8375 MHz MARITIME MOBILE		
156.5625-156.7625 MHz	FIXED MOBILE 5.226			
156.7625-156.7875 MHz	MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228			
156.7875-156.8215 MHz	MARITIME MOBILE (distress and calling) 5.111 5.226			
156.8215-156.8375 MHz	MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228			
156.8375-157.1875 MHz	FIXED MOBILE 5.226	FIXED MOBILE	156-157.6 MHz Maritime mobile VHF band	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 18

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
157.1875-157.3375 MHz	FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	FIXED MOBILE	156-157.6 MHz Maritime mobile VHF band	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
157.3375-161.7875 MHz	FIXED MOBILE 5.226	FIXED MOBILE	157.7875-158.0625 MHz “Radio Paging” band – wide area paging 158.0625-158.5875 MHz Land mobile “MS” band – mobile transmit 158.5875-158.7875 MHz Land mobile “MS” band – simplex 158.80-160.10 MHz Land mobile “Radio Reporter” band 159.0875-159.39375 MHz Land mobile “Bush winch” – simplex 160.9625-161.4875 MHz Land mobile “MS” band – base transmit 160.1-160.6 MHz Short Range Devices 160.1-160.6 MHz “Telemetry and Telecommand” band 160.3-160.6 MHz “Radio Paging” band - local area paging 160.6125-160.9625 MHz Maritime mobile VHF band 160.9625-161.4875 MHz Land mobile “MS” band – base transmit	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
161.7875-161.9375 MHz	FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	FIXED MOBILE	161.4875-162.2 MHz Maritime mobile VHF band	
161.9375-161.9625 MHz	FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	FIXED MOBILE Maritime mobile-satellite (Earth-to-space)	160.6125-160.9625 MHz Maritime mobile VHF band 161.4875-162.2 MHz Maritime mobile VHF band	General User Radio Licence for Maritime Purposes PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 18
161.9625-161.9875 MHz	MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226	MARITIME MOBILE	161.4875-162.2 MHz Maritime mobile VHF band	General User Radio Licence for Maritime Purposes International Radio Regulations Appendix 18
161.9875-162.0125 MHz	FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	FIXED MOBILE Maritime mobile-satellite (Earth-to-space)	161.4875-162.2 MHz Maritime mobile VHF band	General User Radio Licence for Maritime Purposes International Radio Regulations Appendix 18
162.0125-162.0375 MHz	MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226	MARITIME MOBILE	161.4875-162.2 MHz Maritime mobile VHF band	General User Radio Licence for Maritime Purposes International Radio Regulations Appendix 18

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
162.0375-174 MHz	FIXED MOBILE 5.226 5.230 5.231	FIXED MOBILE	161.4875-162.2 MHz Maritime mobile VHF band 162.2-162.45625 MHz Fixed "EE" band 162.58-165.33125 MHz Land mobile "EE" band – base transmit 165.46875-165.70625 MHz Fixed "EE" band 165.70625-166.79375 MHz Land mobile "EE" band – simplex 166.8-167.05625 MHz Fixed "EE" Band 167. 18125 -169.93125 MHz Land mobile "EE" band – mobile transmit 170.06875-170.30625 MHz Fixed "EE" band 170.30625–172.99375 MHz Land mobile "EE" band – simplex 173.44375-173.45625 MHz Itinerant Differential Radio Navigation Satellite Service 173.56875-173.58125 MHz Itinerant Differential Radio Navigation Satellite Service	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices General User Radio Licence for Itinerant Differential GPS PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules International Radio Regulations Appendix 18

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
162.0375-174 MHz	(Continued) FIXED MOBILE 5.226 5.230 5.231	(Continued) FIXED MOBILE	(Continued) 173.6875–173.9875 MHz Land mobile "Bush winch" band – simplex 173-174 MHz Short Range Devices	(Continued) General User Radio Licence for Short Range Devices PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
174-223 MHz	FIXED MOBILE BROADCASTING 5.233 5.238 5.240 5.245	174-230 MHz FIXED MOBILE BROADCASTING	174-184 MHz Spectrum Licences for Land Mobile Radio under Crown Management Right (MR443)	PIB 59: Policy rules for Crown Spectrum Management Rights General User Spectrum Licence for Radio Microphones in the band 174-184 MHz
			184-225 MHz Future usage dependent on Government decisions 210-220 MHz Internet-of-things testbed (until 1 February 2022)	Statement of Government Policy and Directions to the Chief Executive of the Ministry of Business, Innovation and Employment
223-230 MHz	FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 5.250		225-230 MHz Government fixed and mobile services	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
230-235 MHz	FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250	FIXED MOBILE AERONAUTICAL RADIONAVIGATION	Government fixed and mobile services	PIB 58: Radio Licence Policy Rules
235-267 MHz	FIXED MOBILE 5.111 5.254 5.256 5.256A	235-312 MHz FIXED MOBILE	Government fixed and mobile services 235-300 MHz Short Range Devices – limited to determination, telemetry and telecommand usage 243 MHz Distress beacons including Personal Locator Beacons, Emergency Location Transmitters and Emergency Position Indicating Radio Beacons 300-322 MHz Short Range Devices - limited to determination, telemetry and telecommand usage	General User Radio Licence for Short Range Devices General User Radio Licence for Emergency Transmitters PIB 58: Radio Licence Policy Rules
267-272 MHz	FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257			
272-273 MHz	SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254			
273-312 MHz	FIXED MOBILE 5.254			

2.3.5. UHF Band (300 - 3 000 MHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
312-315 MHz	FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	312-328.6 MHz FIXED MOBILE	Government fixed and mobile services 300-322 MHz Short Range Devices - limited to determination, telemetry and telecommand usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
315-322 MHz	FIXED MOBILE 5.254			
322-328.6 MHz	FIXED MOBILE RADIO ASTRONOMY 5.149			
328.6-335.4 MHz	AERONAUTICAL RADIONAVIGATION 5.258	AERONAUTICAL RADIONAVIGATION	Instrument Landing System – glide path transmitters	PIB 58: Radio Licence Policy Rules
335.4-387 MHz	FIXED MOBILE 5.254	335.4-399.9 MHz FIXED MOBILE	Government fixed and mobile services	PIB 58: Radio Licence Policy Rules
387-390 MHz	FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255			
390-399.9 MHz	FIXED MOBILE 5.254			
399.9-400.05 MHz	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	MOBILE-SATELLITE (Earth-to-space)	Mobile Satellite Service – uplink	General User Radio Licence for Satellite Services
400.05-400.15 MHz	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
400.15-401 MHz	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Space operation (space-to-Earth)	Meteorological radiosondes Space Operation Service – downlink	PIB 58: Radio Licence Policy Rules
401-402 MHz	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space)	Meteorological aids Space Operation Service – downlink	PIB 58: Radio Licence Policy Rules
402-403 MHz	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space)	402-406 MHz Short Range Devices – limited to biomedical telemetry usage Meteorological aids	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
403-406 MHz	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265	METEOROLOGICAL AIDS Fixed Mobile	402-406 MHz Short Range Devices – limited to biomedical telemetry usage 404-406 MHz Fixed "I" Band Meteorological aids Government fixed and land mobile services	General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
406-406.1 MHz	MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267	MOBILE-SATELLITE (Earth-to-space)	Satellite Distress Beacons including Personal Locator Beacons, Emergency Location Transmitters and Emergency Position Indicating Radio Beacons	General User Radio Licence for Emergency Transmitters
406.1-410 MHz	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265	406.1-420 MHz FIXED MOBILE	406.1-412 MHz Land mobile "TD" band – mobile transmit 412–413.8 MHz Fixed "I" Band 413.8–414.10625 MHz Land mobile "TD" band – simplex 414.10625-420 MHz Land mobile "TD" band – base transmit	PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
410-420 MHz	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268			
420-430 MHz	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	FIXED MOBILE except aeronautical mobile	420-430 MHz Fixed "I" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
430-432 MHz	RADIOLOCATION Amateur 5.271 5.276	RADIOLOCATION Amateur	430-440 MHz Amateur 70cm band	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
432-438 MHz	RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.271 5.276 5.281 5.282	RADIOLOCATION Amateur	430-440 MHz Amateur 70cm band 433.05-434.79 MHz Short Range Devices 433.05-434.79 MHz Industrial, scientific and medical band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
438-440 MHz	RADIOLOCATION Amateur 5.271 5.276	RADIOLOCATION Amateur	430-440 MHz Amateur 70cm band	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
440-450 MHz	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.286	FIXED MOBILE except aeronautical mobile Radiolocation Space Operation (Earth-to-space) 5.286	440-449 MHz Fixed "JL" band 444-445 MHz Short Range Device – limited to biomedical telemetry usage 449.375-449.75 MHz Fixed “J” band 449.75-450 MHz Land mobile “C” band – simplex 449.75-450.25 MHz Space Operation Service – uplink	General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
450-455 MHz	FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	450-460 MHz FIXED MOBILE Space Operation (Earth-to-space) 5.286	449.75-450.25 MHz Space Operation Service – uplink 450-450.275 MHz Fixed "J" band 450.275-453.3 MHz Land mobile "C" band - mobile transmit 453.3-453.625 MHz Land mobile "C" band - simplex 453.625-454.975 MHz Fixed "J" band 454.975-455.3125 MHz Land mobile "C" band - simplex 455.3125-458.3375 MHz Land mobile "C" band - base transmit 457.5125-457.5875 MHz Maritime on-board communications 458.3375-458.5375 MHz Land mobile "D" band – simplex 458.54-458.61 MHz Short Range Devices 458.6125-458.6625 MHz Land mobile "D" band – simplex 458.6625-460.0125 MHz Fixed "J" band	General User Radio Licence for Maritime UHF On-board Communications General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
455-456 MHz	FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E			
456-459 MHz	FIXED MOBILE 5.286AA 5.271 5.287 5.288			
459-460 MHz	FIXED MOBILE 5.286AA 5.209 5.286A 5.271 5.286B 5.286C 5.286E			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
460-470 MHz	FIXED MOBILE 5.286AA Meteorological-Satellite (space-to-Earth) 5.287 5.288 5.289 5.290	FIXED MOBILE	460.025-461.475 MHz Fixed "J" band 461.8125-464.8125 MHz Land mobile "D" band – base transmit 463.8125-463.8875 MHz Itinerant Differential Radio Navigation Satellite Service 464.8125-465.1875 MHz Land mobile "D" band – simplex 465.1875-466.6375 MHz Fixed "J" band 466.675-466.8 MHz Land mobile "D" band – simplex 466.8-466.85 MHz Short Range Devices 466.85-467 MHz Land mobile "D" band – simplex 467-470 MHz Land mobile "D" band – mobile transmit 467.5125-467.5875 MHz Maritime on-board communications 469-469.075 MHz Itinerant Differential Radio Navigation Satellite Service	PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules General User Radio Licence for Short Range Devices General User Radio Licence for Itinerant Differential GPS General User Radio Licence for Maritime UHF On-board Communications

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
470-585 MHz	FIXED MOBILE 5.296A BROADCASTING 5.291 5.298	470-502 MHz MOBILE	470-470.5 MHz Short Range Devices – limited to biomedical telemetry usage 470.5-471 MHz Land mobile "F" band simplex – simplex 471-471.5 MHz Short Range Devices 471.5-472 MHz Land mobile "F" band – simplex 472-476 MHz Land mobile "F" band – mobile transmit 476-476.4 MHz Land mobile "F" band – simplex 476.4-477.425 MHz Citizen Band Radio "CB Radio" and Personal Radio Service "PRS" 477.425-477.9875 MHz Land mobile "F" band – simplex 477.9875-481.9875 MHz Land mobile "F" band – base transmit 481.9875-483.9875 MHz Land mobile "F" band – simplex 483.9875-487.9875 MHz Land mobile "F" band – base transmit 487.9875-490 MHz Land mobile "F" band – simplex 490-494 MHz Land mobile "F" band – mobile transmit	General User Radio Licence for Short Range Devices General User Radio Licence for Citizen Band Radio PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
(Continued) 470-585 MHz	(Continued) FIXED MOBILE 5.296A BROADCASTING 5.291 5.298	(Continued) 470-502 MHz MOBILE	(Continued) 494-497.5 MHz Land mobile "ESC" band – mobile transmit 497.5-498.5 MHz Land mobile "ESC" band – simplex 498.5-502 MHz Land mobile "ESC" band – base transmit	(Continued) PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules
585-610 MHz	FIXED MOBILE 5.296A BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307	502-694 MHz BROADCASTING MOBILE 5.296A	502-606 MHz Short Range Devices – limited to radio microphone usage 502-694 MHz Short Range Devices – limited to audio/video senders 510-606 MHz Spectrum Licences for digital terrestrial television under Crown Management Right (MR 365) 510-606 MHz Television White Space (TVWS) under interim licensing regime 606-622 MHz Management Rights (MR 369) for Maori language purposes 622-698 MHz Short Range Devices – limited to radio microphone usage 622-703 MHz Unused Crown Management Right (MR 367)	Maori Television Service (Te Aratuku Whakaata Irirangi Maori) Act 2003 General User Radio Licence for Short Range Devices General User Spectrum Licence for UHF Radio Microphones Devices PIB 59: Policy rules for Crown Spectrum Management Rights
610-890 MHz	FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.320			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
(Continued) 610-890 MHz	(Continued) FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.320	694–806 MHz MOBILE 5.296A 5.313A	622-698 MHz Short Range Devices – limited to radio microphone usage 622-703 MHz Unused Crown Management Right (MR 367) 703-748 MHz Private Management Rights for cellular communication systems – mobile transmit 748-758 MHz Unused Crown Management Right (MR 341) 758-803 MHz Private Management Rights for cellular communication systems – base transmit 803-806 MHz Unused Crown Management Right (MR 321)	Radio Spectrum Auctions General User Spectrum Licence for UHF Radio Microphones devices PIB 59: Policy rules for Crown Spectrum Management Rights
		806-890 MHz FIXED MOBILE 5.317A	806-812 MHz Fixed “KK” band – restricted for digital linking 812-813 MHz Land mobile “ESD” band – mobile transmit 813-819 MHz Land mobile “TS” band – mobile transmit 819-824 MHz Short Range Devices	General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
(Continued) 610-890 MHz	(Continued) FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.320	(Continued) 806-890 MHz FIXED MOBILE 5.317A	(Continued)	(Continued)
			825.015-840 MHz Private Management Right for cellular communication services – mobile transmit	Radio Spectrum Auctions
			841-851 MHz Fixed “KL” Band – restricted for Studio to Transmitter Linking (STL) 851-857 MHz Fixed “KK” Band – restricted for digital linking 857-858 MHz Land mobile “ESD” band – base transmit 858-864 MHz Land mobile “TS” band – base transmit 864.1-868.1 MHz Cordless Telephone “CT2” Band 864-868 MHz Short Range Devices 868-870 MHz Short Range Devices – limited to determination, telemetry and telecommand 868.1-869.025 MHz Land mobile “TX” band – simplex	General User Radio Licence for Cordless Telephones General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 23: Mobile service bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
(Continued) 610-890 MHz	(Continued) FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.320	(Continued) 806-890 MHz FIXED MOBILE 5.317A	(Continued)	(Continued)
			870.015–885 MHz Private Management Rights for cellular communication services – base transmit	Radio Spectrum Auctions
890-942 MHz	FIXED MOBILE 5.317A BROADCASTING Radiolocation 5.327	890-960 MHz FIXED MOBILE 5.317A	890-915 MHz Private Management Rights for cellular communication services – mobile transmit	Radio Spectrum Auctions
			915-921 MHz Fixed “K” Band – restricted to Studio to Transmitter Linking (STL), but no new licences are permitted as of 24 December 2015 915-928 MHz Short Range Devices 915-928 MHz Amateur usage 915-928 MHz Industrial, scientific and medical band 928-935 MHz Fixed “K” Band – restricted to Studio to Transmitter Linking (STL)	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
(Continued) 890-942 MHz	(Continued) FIXED MOBILE 5.317A BROADCASTING Radiolocation 5.327	(Continued) 890-960 MHz FIXED MOBILE 5.317A	935-960 MHz Private Management Rights for cellular communication services – base transmit	Radio Spectrum Auctions
942-960 MHz	FIXED MOBILE 5.317A BROADCASTING 5.320			
960-1 164 MHz	AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328AA	AERONAUTICAL RADIONAVIGATION	Aeronautical radionavigation applications including Distance Measuring Equipment (DME), Secondary Surveillance Radar (SSR) and Automatic Dependent Surveillance-Broadcast (ADS-B)	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
1 164-1 215 MHz	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE	Aeronautical radionavigation applications including Distance Measuring Equipment (DME) Global navigation-satellite service	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
1 215-1 240 MHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	RADIOLOCATION RADIONAVIGATION-SATELLITE	Global navigation-satellite service	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 240-1 300 MHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335A	RADIOLOCATION RADIONAVIGATION-SATELLITE Amateur	Aeronautical Radar – Primary Surveillance Radar (PSR) 1 240-1 300 MHz Amateur Radio	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
1 300-1 350 MHz	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	AERONAUTICAL RADIONAVIGATION RADIOLOCATION	Aeronautical Radar – Primary Surveillance Radar (PSR)	PIB 58: Radio Licence Policy Rules
1 350-1 400 MHz	RADIOLOCATION 5.338A 5.149 5.334 5.339	RADIOLOCATION	Aeronautical Radar – Primary Surveillance Radar (PSR)	PIB 58: Radio Licence Policy Rules
1 400-1 427 MHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Radio astronomy and space research All emissions prohibited	
1 427-1 429 MHz	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.341B 5.341C 5.338A 5.341	FIXED MOBILE 5.341C	1 427.5–1 429.5 MHz Fixed "LL" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
1 429-1 452 MHz	FIXED MOBILE 5.341B 5.341C 5.343 5.338A 5.341	FIXED MOBILE 5.341C	1 429.5-1 461.5 MHz Fixed "L" band – mainly used for Customer Multi Access Radio	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 452-1 492 MHz	FIXED MOBILE 5.346A BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345	FIXED MOBILE 5.346A	1 429.5-1 461.5 MHz Fixed "L" band – mainly used for Customer Multi Access Radio	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
1 492-1 518 MHz	FIXED MOBILE 5.341C 5.341	FIXED MOBILE 5.341C	1 490-1 522 MHz Fixed "L" band – mainly used for Customer Multi Access Radio	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
1 518-1 525 MHz	FIXED MOBILE MOBILE-SATELLITE (space-to-earth) 5.348 5.348A 5.351A 5.341	FIXED	1 490-1 522 MHz Fixed "L" band – mainly used for Customer Multi Access Radio 1 522-1 524 MHz Fixed "LL" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
1 525-1 530 MHz	SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.341 5.351 5.352A 5.354	1 525-1 559 MHz MOBILE-SATELLITE (space-to-Earth)	1 525-1 559 MHz Mobile Satellite Service – downlink	
1 530-1 535 MHz	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.341 5.351 5.354			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 535-1 559 MHz	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359	(Continued) 1 525-1 559 MHz MOBILE-SATELLITE (space-to-Earth)	(Continued) 1 525-1 559 MHz Mobile Satellite Service – downlink	
1 559-1 610 MHz	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space–to-space) 5.208B 5.328B 5.329A 5.341	RADIONAVIGATION-SATELLITE (space-to-Earth)	Global navigation satellite service	
1 610-1 610.6 MHz	MOBILE-SATELLITE (Earth-to-Space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-Space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1 610-1 660 MHz MOBILE-SATELLITE (Earth-to-space)	1 610-1 660.5 MHz Mobile Satellite Service – uplink 1 610-1 660.5 MHz Aeronautical Mobile Satellite Service – uplink 1 626.5-1 660.5 MHz Maritime Mobile Satellite Service – uplink	General User Radio Licence for Satellite Services General User Radio Licence for Aeronautical Purposes General User Radio Licence for Maritime Purposes PIB 58: Radio Licence Policy Rules
1 610.6-1 613.8 MHz	MOBILE-SATELLITE (Earth-To-Space 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-Space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 613.8-1 621.35 MHz	MOBILE-SATELLITE (Earth-to-Space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-Satellite (Space-to-Earth) 5.208B Radiodetermination-satellite (Earth-to-Space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	(Continued) 1 610-1 660 MHz MOBILE-SATELLITE (Earth-to-space)	(Continued) 1 610-1 660.5 MHz Mobile Satellite Service – uplink 1 610-1 660.5 MHz Aeronautical Mobile Satellite Service – uplink 1 626.5-1 660.5 MHz Maritime Mobile Satellite Service – uplink	(Continued) General User Radio Licence for Satellite Services General User Radio Licence for Aeronautical Purposes General User Radio Licence for Maritime Purposes PIB 58: Radio Licence Policy Rules
1 621.35-1 626.5 MHz	MARITIME MOBILESATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-Space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372			
1 626.5-1 660 MHz	MOBILE-SATELLITE (Earth-to-Space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.374 5.375 5.376			
1 660-1 660.5 MHz	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.376A	MOBILE-SATELLITE (Earth-to-space) RADIOASTRONOMY		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 660.5-1 668 MHz	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	1 660.5-1 670 MHz RADIOASTRONOMY SPACE RESEARCH (passive) METEOROLOGICAL AIDS	Meteorological aids	PIB 58: Radio Licence Policy Rules
1 668-1 668.4 MHz	MOBILE-SATELLITE (Earth-to-space 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (Passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A			
1 668.4-1 670 MHz	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	(Continued) 1 660.5-1 670 MHz RADIOASTRONOMY SPACE RESEARCH (passive) METEOROLOGICAL AIDS	(Continued) Meteorological aids	(Continued) PIB 58: Radio Licence Policy Rules
1 670-1 675 MHz	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE	Meteorological aids Meteorological satellite service – downlink	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 675-1 690 MHz	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	1 675-1 710 MHz METEOROLOGICAL-SATELLITE (space-to-Earth)	Meteorological satellite service – downlink	PIB 58: Radio Licence Policy Rules
1 690-1 700 MHz	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381			
1 700-1 710 MHz	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384			
1 710-1 930 MHz	FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.388	1 710-1 980 MHz FIXED MOBILE 5.384A 5.388	1 710-1 880 MHz Private Management Rights for cellular communication services	Radio Spectrum Auctions
			1 785-1 805 Short Range Devices – limited to wireless microphones, in-ear monitors, or wireless audio transmitters	General User Radio Licence for Short Range Devices
			1 880-1 900 MHz DECT cordless telephone systems	General User Radio Licence for Cordless Telephones PIB 58: Radio Licence Policy Rules
			1 920-1 980 MHz Private	Radio Spectrum Auctions

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
1 930-1 970 MHz	FIXED MOBILE 5.388A 5.388B 5.388		Management Rights for cellular communication services – mobile transmit	
1 970-1 980 MHz	FIXED MOBILE 5.388A 5.388B 5.388			
1 980-2 010 MHz	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	FIXED MOBILE 5.388 MOBILE-SATELLITE (Earth-to-space)	1 980–2 010 MHz Future usage dependent on Government decisions	
2 010-2 025 MHz	FIXED MOBILE 5.388A 5.388B 5.388	FIXED MOBILE 5.388		
2 025-2 081.5 MHz	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED SPACE RESEARCH (Earth-to-space) (space-to-space)	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED SPACE RESEARCH (Earth-to-space) (space-to-space)	PIB 58: Radio Licence Policy Rules
2 081.5-2 110 MHz		SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space)	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space)	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 110-2 120 MHz	FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space) 5.388	2 110-2 170 MHz FIXED MOBILE 5.388	2 110-2 170 MHz Private Management Rights for cellular communication services – base transmit	
2 120-2 160 MHz	FIXED MOBILE 5.388A 5.388B 5.388			
2 160-2 170 MHz	FIXED MOBILE 5.388A 5.388B 5.388			
2 170-2 200 MHz	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F	FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth)	2 170-2 200 MHz Future usage dependent on Government decisions	
2 200-2 256.5 MHz	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth) FIXED	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth) FIXED	PIB 58: Radio Licence Policy Rules
2 256.5-2 290 MHz		SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth)	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth)	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 290-2 300 MHz	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	Unallocated		
2 300-2 450 MHz	FIXED MOBILE 5.384A RADIOLOCATION Amateur 5.150 5.282 5.393 5.394	2 300–2 370 MHz FIXED MOBILE 5.384A	2 300-2 370 MHz Private Management Rights – for cellular service	Radio Spectrum Auctions
		2 370-2 395 MHz FIXED MOBILE 5.384A Aeronautical Mobile (International Radio Regulations 4.4)	2 370-2 395 MHz Future usage dependent on Government decisions	Statement of Government Policy and Directions to the Chief Executive of the Ministry of Business, Innovation and Employment
		2 395–2 450 MHz FIXED MOBILE Amateur	2 396-2 450 MHz Amateur usage 2 400-2 483.5 MHz Short Range Devices 2 400-2 500 MHz Industrial, scientific and medical band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
2 450-2 483.5 MHz	FIXED MOBILE RADIOLOCATION 5.150	FIXED MOBILE		
2 483.5-2 500 MHz	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 5.150 5.401 5.402	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)	2 483.5-2 500 MHz Mobile Satellite Service – downlink 2 400-2 500 MHz Industrial, scientific and medical band	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 500-2 520 MHz	FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.407 5.414 5.414A 5.404 5.415A	2 500–2 690 MHz FIXED MOBILE 5.384A	2 500-2 575 MHz Private Management Rights – cellular service 2 575-2 620 MHz Spectrum licences under Crown Management Rights (MR 258) – Managed Spectrum Park for local wireless services 2 620-2 690 MHz Private Management Rights – cellular service	Radio Spectrum Auctions Managed Spectrum Park
2 520-2 535 MHz	FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.414A 5.415A			
2 535-2 655 MHz	FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.418 5.418A 5.418B 5.418C			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 655-2 670 MHz	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical Mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420	(Continued) 2 500–2 690 MHz FIXED MOBILE 5.384A	(Continued) 2 620-2 690 MHz Private Management Rights (planned for cellular and fixed wireless access services)	(Continued) Radio Spectrum Auctions
2 670-2 690 MHz	FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149			
2 690-2 700 MHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	All emissions prohibited	
2 700-2 900 MHz	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	AERONAUTICAL RADIONAVIGATION Radiolocation Fixed (International Radio Regulations 4.4)	2 700-2 900 MHz Fixed “2G8” band – Itinerant fixed point-to-point links for television outside broadcast operations	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

2.3.6. SHF Band (3 - 30 GHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
2 900-3 100 MHz	RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	RADIONAVIGATION RADIOLOCATION	2 900-3 100 MHz Maritime radar 2 900-3 400 MHz Short Range Devices – limited to radiolocation usage 3 300-3 410 MHz Amateur usage	General User Radio Licence for Maritime Purposes General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
3 100-3 300 MHz	RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	RADIOLOCATION		
3 300-3 400 MHz	RADIOLOCATION Amateur 5.149 5.429 5.429E 5.429F	RADIOLOCATION Amateur		
3 400-3 500 MHz	FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432 5.432B Radiolocation 5.433 5.282 5.432A	3 400–3 410 MHz MOBILE 5.432B Radiolocation Amateur Amateur Satellite	3 300-3 410 MHz Amateur usage	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
		3 410–3 500 MHz MOBILE 5.432B	3 410-3 434 MHz Spectrum Licences under Crown Management Right (MR 144, 145, 477) for local broadband wireless access 3 434-3 497 MHz Private Management Rights – cellular communication system	Radio Spectrum Auctions
3 500-3 590 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3 500–3 587 MHz MOBILE 5.433A	3 510-3 566 MHz Spectrum Licences under Crown Management Right (MR 155, 156, 419, 202, 203) for local broadband wireless access	Radio Spectrum Auctions

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
		3 587–3 590 MHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.433A	3 566-3 587 MHz Private Management Rights – planned for broadband wireless access	
3 590-3 600 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	MOBILE 5.433A	3 590-3 800 MHz Spectrum Private Management Rights – cellular service Fixed satellite "C" band – downlink	Radio Spectrum Auctions
3 600-3 700 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.435	FIXED-SATELLITE (space-to-Earth) MOBILE		
3 700-3 800 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	MOBILE FIXED-SATELLITE (space-to-Earth)		
3 800-4 200 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	Fixed satellite "C" band – downlink	PIB 58: Radio Licence Policy Rules
4 200-4 400 MHz	AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440	AERONAUTICAL RADIONAVIGATION	Radio altimeters and associated ground transponders Wireless avionics intra-communication systems	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
4 400-4 500 MHz	FIXED MOBILE 5.440A	4 400–5 000 MHz FIXED	4 400-5 000 MHz Fixed "5GHz"	PIB 22: Fixed Service

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
4 500-4 800 MHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A		band	Bands in New Zealand PIB 58: Radio Licence Policy Rules
4 800-4 990 MHz	FIXED MOBILE 5.440A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443			
4 990-5 000 MHz	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			
5 000-5 010 MHz	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	AERONAUTICAL MOBILE-SATELLITE (R)		
5 010-5 030 MHz	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-earth) (space-to-space) 5.328B 5.443B	AERONAUTICAL MOBILE-SATELLITE (R)		
5 030-5091 MHz	AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION	Microwave Landing System	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 091-5150 MHz	FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	FIXED-SATELLITE (Earth-to-space) AERONAUTICAL MOBILE AERONAUTICAL MOBILE-SATELLITE (R) AERONAUTICAL RADIONAVIGATION	Microwave Landing System	
5 150-5 250 MHz	FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.446D 5.447 5.447B 5.447C	AERONAUTICAL RADIONAVIGATION MOBILE except aeronautical mobile	5 150-5 350 MHz Short Range Devices – limited to wireless LAN systems	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
5 250-5 255 MHz	EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A	5 250–5 350 MHz MOBILE except aeronautical mobile		
5 255-5 350 MHz	EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447E 5.448 5.448A	(Continued) 5 250–5 350 MHz MOBILE except aeronautical mobile		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 350-5 460 MHz	EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D	5 350–5 470 MHz AERONAUTICAL RADIONAVIGATION	5 350-5 470 MHz Airborne weather radar	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
5 460-5 470 MHz	RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.448D 5.448B			
5 470-5 570 MHz	MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.450B 5.448B 5.450 5.451	5 470–5 650 MHz MARITIME RADIONAVIGATION MOBILE except aeronautical mobile RADIOLOCATION	5 470-5 725 MHz Short Range Devices – limited to radiolocation and wireless LAN 5 470-5 650 MHz Maritime radar 5 600-5 650 MHz Ground based meteorological radar	General User Radio Licence for Short Range Devices General User Radio Licence for Maritime Purposes PIB 58: Radio Licence Policy Rules
5 570-5 650 MHz	MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 650-5 725 MHz	RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454	RADIOLOCATION MOBILE except aeronautical mobile Amateur Amateur-satellite (Earth-to-space) 5.282	5 470-5 725 MHz Short Range Devices – limited to radiolocation and wireless LAN 5 650-5850 MHz Amateur usage	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
5 725-5 830 MHz	RADIOLOCATION Amateur 5.150 5.453	RADIOLOCATION Amateur	5 650-5850 MHz Amateur usage 5 725-5 850 MHz Fixed radio link devices 5 725-5 875 MHz Industrial, scientific and medical band 5 725-5 875 MHz Short Range Devices	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Fixed Radio Link Devices General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
5 830-5 850 MHz	RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.453	RADIOLOCATION Amateur Amateur Satellite (space-to-Earth)		
5 850-5 925 MHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 5.150	FIXED MOBILE	5 725-5 875 MHz Industrial, scientific and medical band 5 725-5 875 MHz Short Range Devices 5 875-5 925 MHz Future usage dependent on Government decisions	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules Statement of Government Policy and Directions to the Chief Executive of the Ministry of Business, Innovation and Employment

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
5 925-6 700 MHz	FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	FIXED FIXED-SATELLITE (Earth-to-space)	5 925–6 725 MHz Fixed satellite "C" band – uplink 5 925-6 425 MHz Fixed "6 GHz" band 6 440-7 100 MHz Fixed "7 GHz (Lower)" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
6 700-7 075 MHz	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth)	6 440-7 100 MHz Fixed "7 GHz (Lower)" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
7 075-7 145 MHz	FIXED MOBILE 5.458 5.459	7 075–7 250 MHz FIXED	6 440-7 100 MHz Fixed "7 GHz (Lower)" band 7 100-7 425 MHz Fixed "7 GHz (Middle)" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
7 145-7 190 MHz	FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459			
7 190-7 235 MHz	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459			
7 235-7 250 MHz	EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED MOBILE 5.458			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
7 250-7 300 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	7 250–7 750 MHz FIXED FIXED-SATELLITE (space-to-Earth)	7 250-7 750 MHz Fixed satellite "X" band – downlink 7 425-7 725 MHz Fixed "7 GHz (Upper)" band 7 725–8 275 MHz Fixed "8 GHz (Lower)" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
7 300-7 375 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461			
7 375-7 450 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB			
7 450-7 550 MHz	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB 5.461A			
7 550-7 750 MHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
7 750-7 900 MHz	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	FIXED	7 725-8 275 MHz Fixed “8 GHz (Lower)” band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
7 900-8 025 MHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	7 900–8 400 MHz FIXED FIXED-SATELLITE (Earth-to-space)	7 725-8 275 MHz Fixed “8 GHz (Lower)” band 7 900-8 400 MHz Fixed satellite “X” band – uplink 8 275-8 500 MHz Fixed “8 GHz (Upper)” band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
8 025-8 175 MHz	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A			
8 175-8 215 MHz	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A			
8 215-8 400 MHz	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A			
8 400-8 500 MHz	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (Space-to-Earth) 5.465 5.466	FIXED	8 275-8 500 MHz Fixed “8 GHz (Upper)” band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
8 500-8 550 MHz	RADIOLOCATION 5.468 5.469	8 500–8 750 MHz RADIOLOCATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
8 550-8 650 MHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A			
8 650-8 750 MHz	RADIOLOCATION 5.468 5.469			
8 750-8 850 MHz	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	RADIOLOCATION AERONAUTICAL RADIONAVIGATION	8 750-8 850 MHz Airborne Doppler radar 8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Aeronautical Purposes General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
8 850-9 000 MHz	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	RADIOLOCATION MARITIME RADIONAVIGATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
9 000-9 200 MHz	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.471 5.473A	AERONAUTICAL RADIONAVIGATION Radiolocation		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
9 200-9 300 MHz	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D	RADIOLOCATION MARITIME RADIONAVIGATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage 9 200-9 500 MHz Maritime radar 9 200-9 500 MHz Search and Rescue Radar Transponders	General User Radio Licence for Short Range Devices General User Radio Licence for Maritime Purposes General User Radio Licence for Emergency Transmitters PIB 58: Radio Licence Policy Rules
9 300-9 500 MHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION 5.475 SPACE RESEARCH (active) 5.427 5.474 5.475A 5.475B 5.476A	RADIONAVIGATION RADIOLOCATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage 9 200-9 500 MHz Maritime radar 9 200-9 500 MHz Search and Rescue Radar Transponders	General User Radio Licence for Short Range Devices General User Radio Licence for Maritime Purposes General User Radio Licence for Emergency Transmitters PIB 58: Radio Licence Policy Rules
9 500-9 800 MHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	RADIOLOCATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
9 800-9 900 MHz	RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	RADIOLOCATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
9 900-10 000 MHz	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed 5.474D 5.477 5.478 5.479	RADIOLOCATION	8 500-10 000 MHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
10-10.4 GHz	EARTH EXPLORATIONSATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	RADIOLOCATION Amateur	10-10.5 GHz Amateur usage 10-10.6 GHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
10.40-10.45 GHz	FIXED MOBILE RADIOLOCATION Amateur	RADIOLOCATION Amateur	10-10.5 GHz Amateur usage 10-10.6 GHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices
10.45-10.5 GHz	RADIOLOCATION Amateur Amateur-satellite 5.481	RADIOLOCATION Amateur Amateur-satellite	10-10.5 GHz Amateur usage 10-10.6 GHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
10.50-10.55 GHz	FIXED MOBILE RADIOLOCATION	10.50–10.68 GHz FIXED RADIOLOCATION	10-10.6 GHz Short Range Devices – limited to radiolocation usage 10.5-10.68 GHz Fixed "10GHz" Band	General User Radio Licence for Short Range Devices PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
10.55-10.6 GHz	FIXED MOBILE except aeronautical mobile Radiolocation			
10.60-10.68 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A			
10.68-10.7 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	RADIO ASTRONOMY SPACE RESEARCH (passive)	All emissions prohibited	
10.7-10.95 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile	10.7–11.7 GHz FIXED	10.7-11.7 GHz Fixed "11 GHz" Band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
10.95-11.2 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
11.2-11.45 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile	(Continued) 10.7–11.7 GHz FIXED	(Continued) 10.7-11.7 GHz Fixed "11 GHz" Band	(Continued) PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
11.45-11.7 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile			
11.7-12.2 GHz	FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	BROADCASTING-SATELLITE	11.7-12.75 GHz Fixed satellite "Ku" band – downlink	PIB 58: Radio Licence Policy Rules
12.2-12.5 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484B MOBILE except aeronautical mobile BROADCASTING 5.487 5.484A	BROADCASTING FIXED-SATELLITE (space-to-Earth)	11.7-12.75 GHz Fixed satellite "Ku" band – downlink 12.2-12.75 GHz Broadcasting-satellite "Ku" Band – Freeview and Sky TV satellite service	PIB 58: Radio Licence Policy Rules
12.5-12.75 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493	BROADCASTING-SATELLITE FIXED-SATELLITE (space-to-Earth)	11.7-12.75 GHz Fixed satellite "Ku" band – downlink 12.2-12.75 GHz Broadcasting-satellite "Ku" band – Freeview and Sky TV satellite service	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
12.75-13.25 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	FIXED	12.75-13.25 GHz Fixed "13 GHz" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
13.25-13.4 GHz	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION SPACE RESEARCH (active)	Aeronautical radionavigation applications – airborne doppler radar	General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
13.4-13.65 GHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH	13.4-14 GHz Government radiolocation usage	PIB 58: Radio Licence Policy Rules
13.65-13.75 GHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH	13.4-14 GHz Government radiolocation usage	PIB 58: Radio Licence Policy Rules
13.75-14 GHz	FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503	FIXED SATELLITE (Earth-to-space) RADIOLOCATION	13.4-14 GHz Government radiolocation usage	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
14-14.25 GHz	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505	14–14.5 GHz FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space)	14-14.5 GHz Fixed satellite "Ku" band – uplink (including earth station in-motion) 14-14.5 GHz Mobile satellite "Ku" band – uplink 14-14.5 GHz Maritime mobile satellite service – uplink 14-14.5 GHz Aeronautical mobile satellite service – uplink	General User Radio Licence for Satellite Services General User Radio Licence for Maritime Purposes General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
14.25-14.3 GHz	FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508			
14.3-14.4 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.484B 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
14.4-14.47 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A			
14.47-14.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	(Continued) 14–14.5 GHz FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space)	(Continued) 14-14.5 GHz Fixed satellite "Ku" band – uplink (including earth station in-motion) 14-14.5 GHz Mobile satellite "Ku" band – uplink 14-14.5 GHz Maritime mobile satellite service – uplink 14-14.5 GHz Aeronautical mobile satellite service – uplink	(Continued) General User Radio Licence for Satellite Services General User Radio Licence for Maritime Purposes General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
14.5-14.75 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G	14.5–15.35 GHz FIXED	14.5-15.35 GHz Fixed "15 GHz" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
14.75-14.8 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G			
14.8-15.35 GHz	FIXED MOBILE Space research 5.339			
15.35-15.4 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	RADIO ASTRONOMY SPACE RESEARCH (passive)	All emissions prohibited	
15.4-15.43 GHz	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
15.43-15.63 GHz	FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	FIXED-SATELLITE (space-to-Earth) (Earth-to-space) AERONAUTICAL RADIONAVIGATION		
15.63-15.7 GHz	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION		
15.7-16.6 GHz	RADIOLOCATION 5.512 5.513	RADIOLOCATION	15.7-17.3 GHz Short Range Devices – limited to radiolocation Usage	General User Radio Licence for Short Range Devices
16.6-17.1 GHz	RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	RADIOLOCATION Space research (deep space) (Earth-to-space)	15.7-17.3 GHz Short Range Devices – limited to radiolocation Usage	General User Radio Licence for Short Range Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
17.1-17.2 GHz	RADIOLOCATION 5.512 5.513	RADIOLOCATION	15.7-17.3 GHz Short Range Devices – limited to radiolocation Usage	General User Radio Licence for Short Range Devices
17.2-17.3 GHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	15.7-17.3 GHz Short Range Devices – limited to radiolocation Usage	General User Radio Licence for Short Range Devices
17.3-17.7 GHz	FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	FIXED-SATELLITE (Earth-to-space) Radiolocation		
17.7-18.1 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	17.7–19.7 GHz FIXED FIXED-SATELLITE (space-to-Earth)	17.7-19.7 GHz Fixed satellite “Ka” band – downlink 17.7-19.7 GHz Fixed “18 GHz” band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
18.1-18.4 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 MOBILE 5.519 5.521			
18.4-18.6 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A MOBILE			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
18.6-18.8 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A			
18.8-19.3 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A MOBILE			
19.3-19.7 GHz	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E MOBILE			
19.7-20.1 GHz	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)	19.7-20.2 GHz Fixed satellite "Ka" band – downlink (including earth station in-motion) 19.7-20.2 GHz Mobile satellite "Ka" band – downlink	PIB 58: Radio Licence Policy Rules
20.1-20.2 GHz	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
20.2-21.2 GHz	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	Government fixed and mobile satellite – downlink	PIB 58: Radio Licence Policy Rules
21.2-21.4 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	21.2–23.6 GHz FIXED MOBILE	21.2-23.6 GHz Fixed "23 GHz" band 22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022)	PIB 22: Fixed Service Bands in New Zealand General User Radio Licence for Vehicular Radar Short Range Devices PIB 58: Radio Licence Policy Rules
21.4-22 GHz	FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.531			
22-22.21 GHz	FIXED MOBILE except aeronautical mobile 5.149			
22.21-22.5 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	(continued) 21.2–23.6 GHz FIXED MOBILE	(continued) 21.2-23.6 GHz Fixed "23 GHz" band 22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022)	(continued) PIB 22: Fixed Service Bands in New Zealand General User Radio Licence for Vehicular Radar Short Range Devices PIB 58: Radio Licence Policy Rules
22.5-22.55 GHz	FIXED MOBILE			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
22.55-23.15 GHz	FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149			
23.15-23.55 GHz	FIXED INTER-SATELLITE 5.338A MOBILE			
23.55-23.6 GHz	FIXED MOBILE			
23.6-24 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	RADIO ASTRONOMY SPACE RESEARCH (passive)	22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022)	General User Radio Licence for Vehicular Radar Short Range Devices
24-24.05 GHz	AMATEUR AMATEUR-SATELLITE 5.150	AMATEUR AMATEUR-SATELLITE	22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022) 24-24.25 GHz Amateur usage 24-24.25 GHz Industrial, scientific and medical band 24-24.25 GHz Short Range Devices	General User Radio Licence for Vehicular Radar Short Range Devices General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
24.05-24.25 GHz	RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150	RADIOLOCATION Amateur		
24.25-24.45 GHz	RADIONAVIGATION FIXED MOBILE 5.338A 5.532AB	RADIONAVIGATION FIXED MOBILE		
24.45-24.65 GHz	FIXED INTER-SATELLITE MOBILE 5.338A 5.532AB RADIONAVIGATION 5.533	FIXED MOBILE RADIONAVIGATION		
			24.549-25.392 GHz Private	Radio Spectrum Auctions

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
24.65-24.75 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.338A 5.532AB	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	Management Rights –fixed services 22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022)	General User Radio Licence for Vehicular Radar Short Range Devices
24.75-25.25 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE 5.338A 5.532AB	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		
25.25-25.5 GHz	FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)	FIXED MOBILE		
25.5-27 GHz	EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED MOBILE	25.557-26.4 GHz Private Management Rights –fixed services 22-26.625 GHz Short Range Vehicular Radar (until 1 January 2022)	Radio Spectrum Auctions General User Radio Licence for Vehicular Radar Short Range Devices
27-27.5 GHz	FIXED 5.534A FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE 5.338A 5.532AB	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	27-27.5 GHz Fixed satellite "Ka" band – uplink	PIB 58: Radio Licence Policy Rules
27.5-28.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 MOBILE 5.538 5.540	27.5–29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	27.5-29.5 GHz Fixed satellite "Ka" band – uplink	PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
28.5-29.1 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540			
29.1-29.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540			
29.5-29.9 GHz	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space)	29.5-30 GHz Fixed Satellite "Ka" band – uplink (including earth station in-motion) 29.5-30 GHz Mobile satellite "Ka" band – uplink	General User Radio Licence for Satellite Services General User Radio Licence for Maritime Purposes General User Radio Licence for Aeronautical Purposes PIB 58: Radio Licence Policy Rules
29.9-30 GHz	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)		

2.3.7. EHF Band (30 - 1 000 GHz)

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
30-31 GHz	FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)	Government fixed and mobile satellite – uplink	PIB 58: Radio Licence Policy Rules
31-31.3 GHz	FIXED 5.338A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	FIXED		
31.3-31.5 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	RADIO ASTRONOMY SPACE RESEARCH (passive)	All emissions prohibited	
31.5-31.8 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile		
31.8-32 GHz	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	FIXED RADIONAVIGATION		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
32-32.3 GHz	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	FIXED RADIONAVIGATION		
32.3-33 GHz	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	FIXED RADIONAVIGATION		
33-33.4 GHz	FIXED 5.547A RADIONAVIGATION 5.547 5.547E	FIXED RADIONAVIGATION		
33.4-34.2 GHz	RADIOLOCATION 5.549	RADIOLOCATION	33.4-36 GHz Short Range Devices – limited to radiolocation usage	General User Radio Licence for Short Range Devices
34.2-34.7 GHz	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	RADIOLOCATION		
34.7-35.2 GHz	RADIOLOCATION Space research 5.549	RADIOLOCATION		
35.2-35.5 GHz	METEOROLOGICAL AIDS RADIOLOCATION 5.549	METEOROLOGICAL AIDS RADIOLOCATION		
35.5-36 GHz	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active)		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
36-37 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	FIXED MOBILE SPACE RESEARCH		
37-37.5 GHz	FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) 5.547	37–40 GHz FIXED	37-39.5 GHz Fixed "38 GHz" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
37.5-38 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547			
38-39.5 GHz	FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth 5.547			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
39.5-40 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E			
40-40.5 GHz	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E	UNALLOCATED		
40.5-41 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile 5.547			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
41-42.5 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile 5.547 5.551F 5.551H 5.551I			
42.5-43.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY 5.149 5.547			
43.5-47 GHz	MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	RADIONAVIGATION	46.7-46.9 GHz Short Range Devices – limited to field disturbance sensors	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
47-47.2 GHz	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE	47-47.2 GHz Amateur usage	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
47.2-47.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A	UNALLOCATED		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
47.5-47.9 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B			
47.9-48.2 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B 5.552A			
48.2-50.2 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.338A 5.550C 5.552 MOBILE 5.149 5.340 5.555			
50.2-50.4 GHz	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340			
50.4-51.4 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)	FIXED	50.4-51.2 GHz Fixed "50 GHz" band	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
51.4-52.4 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE 5.338A 5.547 5.556	UNALLOCATED		
52.4-52.6 GHz	FIXED 5.338A MOBILE 5.547 5.556			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
52.6-54.25 GHz	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556			
54.25-55.78 GHz	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE.5.556A SPACE RESEARCH (passive) 5.556B	SPACE RESEARCH (passive)		
55.78-56.9 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE.5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	UNALLOCATED		
56.9-57 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557			
57-58.2 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	57–66 GHz FIXED MOBILE	57-66 GHz Short Range Devices 57-64 GHz Fixed Radio Link Devices 61-61.5 GHz Industrial,	General User Radio Licence for Short Range Devices General User Radio Licence for Fixed Radio Link Devices

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
58.2-59 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547.5.556		scientific and medical band	PIB 58: Radio Licence Policy Rules
59-59.3 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)			
59.3-64 GHz	FIXED INTER-SATELLITE MOBILE.5.558 RADIOLOCATION 5.559 5.138			
64-65 GHz	FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556			
65-66 GHz	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	(Continued) 57–66 GHz FIXED MOBILE	(Continued) 57–66 GHz Short Range Devices	(Continued) General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
66-71 GHz	INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	UNALLOCATED		
71-74 GHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space–to-Earth)	71–76 GHz FIXED	71-76 GHz Fixed “80 GHz” band – lower half	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
74-76 GHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561			
76-77.5 GHz	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite Space research (space-to-Earth) 5.149	RADIOLOCATION Amateur	76-81 GHz Short Range Devices – limited to field disturbance sensors 76-81 GHz Amateur usage	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
77.5-78 GHz	AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	AMATEUR AMATEUR-SATELLITE RADIOLOCATION	76-81 GHz Short Range Devices – limited to field disturbance sensors 76-81 GHz Amateur usage	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
78-79 GHz	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	RADIOLOCATION Amateur		Radio Operators PIB 58: Radio Licence Policy Rules
79-81 GHz	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	RADIOLOCATION Amateur		
81-84 GHz	FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	81–86 GHz FIXED	81-86 GHz Fixed “80 GHz” band – upper half	PIB 22: Fixed Service Bands in New Zealand PIB 58: Radio Licence Policy Rules
84-86 GHz	FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149			
86-92 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	UNALLOCATED		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
92-94 GHz	FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	UNALLOCATED	All emissions prohibited	
94-94.1 GHz	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	UNALLOCATED		
94.1-95 GHz	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149			
95-100 GHz	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554			
100-102 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341			
102-105 GHz	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	UNALLOCATED	All emissions prohibited	

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
105-109.5 GHz	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (Passive) 5.562B 5.149 5.341	UNALLOCATED		
109.5-111.8 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341			
111.8-114.25 GHz	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	UNALLOCATED	All emissions prohibited	
114.25-116 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	UNALLOCATED		
116-119.98 GHz	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341			
119.98-122.25 GHz	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	MOBILE	122-123 GHz Short Range Devices	General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
122.25-123 GHz	FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	MOBILE Amateur	122-123 GHz Short Range Devices 122-123 GHz Industrial, scientific and medical band 122.25-123 GHz Amateur usage	General User Radio Licence for Short Range Devices General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
123-130 GHz	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	UNALLOCATED		
130-134 GHz	EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A			
134-136 GHz	AMATEUR AMATEUR-SATELLITE Radio astronomy	134–141 GHz AMATEUR AMATEUR-SATELLITE	134-141 GHz Amateur usage	General User Radio Licence for Amateur Radio Operators PIB 58: Radio Licence Policy Rules
136-141 GHz	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.149			

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
141-148.5 GHz	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	UNALLOCATED		
148.5-151.5 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
151.5-155.5 GHz	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149			
155.5-158.5 GHz	FIXED MOBILE RADIO ASTRONOMY 5.149			
158.5-164 GHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)			
164-167 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
167-174.5 GHz	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	UNALLOCATED		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
174.5-174.8 GHz	FIXED INTER-SATELLITE MOBILE 5.558			
174.8-182 GHz	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)			
182-185 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
185-190 GHz	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)			
190-191.8 GHz	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340			
191.8-200 GHz	FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554			
200-209 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	UNALLOCATED		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
209-217 GHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341			
217-226 GHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341			
226-231.5 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			
231.5-232 GHz	FIXED MOBILE Radiolocation			
232-235 GHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation			
235-238 GHz	EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B			
238-240 GHz	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	UNALLOCATED		

Frequency Range	International Region 3 Allocation	New Zealand Allocation	Summary of Usage	References and Policies
240-241 GHz	FIXED MOBILE RADIOLOCATION			
241-248 GHz	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	RADIOLOCATION Amateur Amateur-satellite	241-250 GHz Amateur usage 244-246 GHz Short Range Devices 244-246 GHz Industrial, scientific and medical band	General User Radio Licence for Amateur Radio Operators General User Radio Licence for Short Range Devices PIB 58: Radio Licence Policy Rules
248-250 GHz	AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	AMATEUR AMATEUR-SATELLITE		
250-252 GHz	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340.5.563A	UNALLOCATED		
252-265 GHz	FIXED MOBILE MOBILE-SATELLITE (Earth–to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554			
265-275 GHz	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	UNALLOCATED		
275-3 000 GHz	(Not allocated) 5.564A 5.565	UNALLOCATED	275-1 000 GHz Amateur usage – on a temporary basis until further notice	General User Radio Licence for Amateur Radio Operators

2.4. IRR Article 5 Footnotes Applicable to ITU Region 3

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

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

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

5.54C *Additional allocation*: In China, the frequency band 8.3-9 kHz is also allocated to the maritime radionavigation and maritime mobile services on a primary basis. (WRC-12)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.79A When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev.WRC-97)**). (WRC-97)

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

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

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

this frequency band, and this should be taken into account by the countries authorizing such use. (WRC-12)

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

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

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

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

5.97 In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.

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

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

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

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

5.111 The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**.

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

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

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

5.115 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31** and Appendix **13** by stations of the maritime mobile service engaged in coordinated search and rescue operations. (WRC-07)

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

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

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

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

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

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

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

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

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

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

5.132A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev. WRC-12)**. (WRC-12)

5.133A Alternative allocation: in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5 250-5 275 kHz and 26 200-26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-19)

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

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

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

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

5.138 The following bands:

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

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

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

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

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

5.141B *Additional allocation:* in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates,

Eritrea, Guinea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-19)

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

5.143A In Region 3, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed service on a primary basis and land mobile service on a secondary basis, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

5.143B In Region 1, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located on condition that harmful interference is not caused to the broadcasting service. The total radiated power of each station shall not exceed 24 dBW. (WRC-12)

5.143C *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Morocco, Mauritania, Niger, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan, Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-12)

5.143D In Region 2, frequencies in the band 7 350-7 400 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

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

5.145 The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles **31** and **52** and in Appendix **13**. (WRC-07)

5.145A Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed service. Applications of the radiolocations service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev. WRC-12)**. (WRC-07)

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

5.147 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775-9 900 kHz, 11 650-11 700 kHz and 11 975-12 050 kHz may be used by stations in

the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.

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

13 360 - 13 410 kHz,	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-07)

5.150 The following bands:

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

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

5.151 *Additional allocation:* frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)

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

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

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

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

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

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

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

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

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

5.162 *Additional allocation:* in Australia, the band 44-47 MHz is also allocated to the broadcasting service on a primary basis. (WRC-12)

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-19)

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

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

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

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

5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-12)

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

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

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

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

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

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

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

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

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

5.197 Additional allocation: in the Syrian Arab Republic, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is

no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. 9.21. (WRC-12)

5.197A 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 **413 (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-07)

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** for distress and safety purposes with stations of the aeronautical mobile service. (WRC-07)

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

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

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

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

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

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

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

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

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

5.208B[*] In the bands:

137-138 MHz,

157.1875-157.3375 MHz,

161.7875-161.9375 MHz,

387-390 MHz,

400.15-401 MHz,

1 452-1 492 MHz,

1 525-1 610 MHz,

1 613.8-1 626.5 MHz,

2 655-2 690 MHz,

21.4-22 GHz,

Resolution **739 (Rev.WRC-19)** applies. (WRC-19)

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

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

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

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

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

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

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

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

Russian Federation, India, Iran (Islamic Republic of), Japan, Kazakhstan, Malaysia, Uzbekistan, Kyrgyzstan, Thailand and Viet Nam. In case this power flux-density limit is exceeded, agreement under No. **9.21** is required to be obtained from countries mentioned in this footnote. (WRC-19)

5.219 The use of the 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. The use of the frequency band 148-149.9 MHz by nongeostationary-satellite systems in the space operation service identified as short-duration mission is not subject to No. **9.11A**. (WRC-19)

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

5.221 Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Eswatini, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-19)

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

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

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

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

In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **18**). Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

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

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

5.228 The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long-range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency bands by systems operating in the maritime mobile service for communications shall not exceed 1 W. (WRC-12)

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

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

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

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

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

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

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

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

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

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

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

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

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 no cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. **5.256A**. (WRC-03)

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

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

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

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

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

5.260A In the frequency band 399.9-400.05 MHz, the maximum e.i.r.p. of any emission of earth stations in the mobile-satellite service shall not exceed 5 dBW in any 4 kHz band and the maximum e.i.r.p. of each earth station in the mobile-satellite service shall not exceed 5 dBW in the whole 399.9-400.05 MHz frequency band. Until 22 November 2022, this limit shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2022, these limits shall apply to all systems within the mobile-satellite service operating in this frequency band. In the frequency band 399.99-400.02 MHz, the e.i.r.p. limits as specified above shall apply after 22 November 2022 to all systems within the mobile-satellite service. Administrations are requested that their mobilesatellite service satellite links in the 399.99-400.02 MHz frequency band comply with the e.i.r.p. limits as specified above, after 22 November 2019. (WRC-19)

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

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

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

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

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

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

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

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

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

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

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

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

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

5.268 Use of the frequency band 410-420 MHz by the space research service is limited to space-to-space communication links with an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from transmitting stations of the space research service (space-to-space) in the frequency band 410-420 MHz shall not exceed -153 dB(W/m^2) for 0° <= 8 <= 5°, -153 + 0.077 (8 - 5) dB(W/m^2) for 5° <= 8 <= 70° and -148 dB(W/m^2) for 70° <= 8 <= 90°, where 8 is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. In this frequency band, stations of the space research service (space-to-space) shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. **4.10** does not apply. (WRC-15)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.313A The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. In China, the use of IMT in this frequency band will not start until 2015. (WRC-19)

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

5.320 *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.

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

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

5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities. (WRC-07)

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

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

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

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

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

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

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

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

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

5.335A 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)

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

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

5.340 All emissions are prohibited in the following bands:

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

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

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

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

5.341C The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev. WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1 518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands

by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.343 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 (WRC-19).**

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

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

5.348A In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **911A** 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/m²) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix **5**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan No. **5.43A** does not apply. (WRC-03)

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

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

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

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

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

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

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

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

5.357A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the frequency bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (Rev. WRC-12)** shall apply). (WRC-12)

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

5.364 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**. (WRC-12)

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

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

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

5.373 Maritime mobile earth stations receiving in the frequency band 1 621.35-1 626.5 MHz shall not impose additional constraints on earth stations operating in the maritime mobile-satellite service or maritime earth stations of the radiodetermination-satellite service operating in accordance with the Radio Regulations in the frequency band 1 6101 621.35 MHz or on earth stations operating in the maritime mobile-satellite service operating in accordance with the Radio Regulations in the frequency band 1 626.5-1 660.5 MHz, unless otherwise agreed between the notifying administrations. (WRC-19)

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

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

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

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

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

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

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

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

5.379C In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed –181 dB(W/m²) in 10 MHz and –194 dB(W/m²) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2000s. (WRC-03)

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

5.379E 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 **744 (WRC-03)** shall apply. (WRC-03)

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

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

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

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

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

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

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

5.388A In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution **221 (Rev. WRC-03)**. Their use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-12)

5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the frequency bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of −127 dB(W/(m2 · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-19)

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

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

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

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.1154-0, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-15)

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

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

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

5.398 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.

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

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

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

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

5.407 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/(m2 ⍰ 4 kHz)) in Argentina, unless otherwise agreed by the administrations concerned.

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

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

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

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

-136 dB(W/(m^2 · MHz)) for $0° \le \theta \le 5°$

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

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

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

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

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

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

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

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

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of -122 dB(W/(m^2 · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system.

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

5.418A In certain Region 3 countries listed in No**. 5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4**, coordination information, or notification information, is considered to have been received after 2 June 2000, and No**. 22.2** does not apply. No**. 22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 200. (WRC-03)

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

5.418C Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound) pursuant to No**. 5.418** and No**. 2.22** does not apply. (WRC-03)

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

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

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

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

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

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

5.425 In the band 2 900-3 100 MHz, the use of the ship borne 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**.

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

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

5.429E *Additional allocation:* in Papua New Guinea, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)

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

protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-19)

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

5.432A In Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/($m^2 \cdot 4$ kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

5.432B Different category of service: in Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, India, Iran (Islamic Republic of), Malaysia, New Zealand, the Philippines, Singapore and Thailand, the frequency band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed -154.5 dB(W/(m^2 . 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

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

5.433A In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, New Zealand, Pakistan, the Philippines and the Dem. People's Rep. of Korea, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed -154.5 dB(W/(m^2 · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-19)

5.435 In Japan, in the band 3 620-3 700 MHz, the radiolocation service is excluded.

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

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

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

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

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

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

5.441 The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density produced by this station does not exceed -155 dB(W/(m^2 · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This criterion is subject to review at WRC-23. See Resolution **223 (Rev. WRC-19)**. This identification shall be effective after WRC-19. (WRC-19)

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

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

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

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

010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution **741 (Rev. WRC-15)**. (WRC-15)

5.443C The use of the frequency band 5 030-5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030-5 091 MHz shall be limited to protect RNSS system downlinks in the adjacent 5 010-5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of −75 dBW/MHz in the frequency band 5 010-5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)

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

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

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

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

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

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

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev. WRC-19)**. (WRC-19)

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

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

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

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

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

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

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

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

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[*] *Note by the Secretariat:* This Resolution was revised by WRC-15.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. (WRC-12)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.493 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)

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

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

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

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

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

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

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

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

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

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

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

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

- -115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced at 36m above sea level at the low water mark, as officially recognised by the coastal state;
- -115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained.

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

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

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

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

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

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

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

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

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

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

5.504A In the band 14.14-5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. (WRC-03)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.516 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)

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

17.3-17.7 GHz	(space-to-Earth) in Region 1
18.3-19.3 GHz	(space-to-Earth) in Region 2
19.7-20.2 GHz	(space-to-Earth) in all Regions
39.5-40 GHz	(space-to-Earth) in Region 1
40-40.5 GHz	(space-to-Earth) in all Regions
40.5-42 GHz	(space-to-Earth) in Region 2
47.5-47.9 GHz	(space-to-Earth) in Region 1
48.2-48.54 GHz	(space-to-Earth) in Region 1
49.44-50.2 GHz	(space-to-Earth) in Region 1

and

27.5-27.82 GHz	(Earth-to-space) in Region 1
28.35-28.45 GHz	(Earth-to-space) in Region 2
28.45-28.94 GHz	(Earth-to-space) in all Regions
28.94-29.1 GHz	(Earth-to-space) in Region 2 and 3
29.25-29.46 GHz	(Earth-to-space) in Region 2
29.46-30 GHz	(Earth-to-space) in all Regions
48.2-50.2 GHz	(Earth-to-space) in Region 2

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

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

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

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

5.523A 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** of the Radio Regulations 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** of the Radio Regulations shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **4** coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)

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

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

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

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

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

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

5.530A Unless otherwise agreed between the administrations concerned, any station in the fixed or mobile services of an administration shall not produce a power flux-density in excess of -120.4 dB(W/(m^2 · MHz)) at 3 m above the ground of any point of the territory of any other administration in Regions 1 and 3 for more than 20% of the time. In conducting the calculations, administrations should use the most recent version of Recommendation ITU-R P.452 (see also the most recent version of Recommendation ITU-R BO.1898). (WRC-15)

5.530B In the band 21.4-22 GHz, in order to facilitate the development of the broadcasting-satellite service, administrations in Regions 1 and 3 are encouraged not to deploy stations in the mobile service and are encouraged to limit the deployment of stations in the fixed service to point-to-point links. (WRC-12)

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

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

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

5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **242 (WRC-19)** applies. (WRC-19)

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

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

5.534A The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution 166 (WRC-19). Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.2527.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore, the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a coprimary basis, and does not establish priority in the Radio Regulations. (WRC-19)

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

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

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

5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution **242 (WRC-19)** applies. (WRC-19)

5.536B In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Sudan, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution **24 (WRC-19)** applies. (WRC-19)

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

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

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

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

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

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

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

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

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

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

5.543B The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **167 (WRC-19).** (WRC-19)

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

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

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

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

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

5.547D 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)

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

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

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

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

5.550B The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see No. **5.516B**), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution **243 (WRC-19)** applies. (WRC-19)

5.550C The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.250.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixedsatellite service is subject to the application of the provisions of No. 9.12 for coordination with other non-geostationarysatellite systems in the fixed-satellite service but not with non-geostationary-satellite systems in other services. Resolution **770 (WRC-19**) shall also apply, and No. **22.2** shall continue to apply. (WRC-19)

5.550D The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. **5.43A** does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution **168 (WRC-19).** (WRC-19)

5.550E The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile-satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to-Earth) is subject to the application of the provisions of No. **9.12** for coordination with other non-geostationarysatellite systems in the fixed-satellite and mobile-satellite services but not with non-geostationary-satellite systems in other services. No. **22.2** shall continue to apply for non-geostationary-satellite-systems. (WRC-19)

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

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

- -230 dB(W/m^2) in 1 GHz and -246 dB(W/m^2) in any 500 kHz of the frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a single-dish telescope; and
- -209 dB(W/m^2) in any 500 kHz of the frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631-0 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{min} of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information).

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

– was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004;

or

– was notified before the date of receipt of the complete Appendix **4** information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-15)

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

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

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

– was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or
– was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC 03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)

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

5.552A The allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by HAPS shall be in accordance with the provisions of Resolution **122 (Rev.WRC-19)**. (WRC-19)

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

5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, GuineaBissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account No. **5.553**. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. **Resolution 244 (WRC-19)** applies. (WRC-19)

5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution **243 (WRC-19)** applies. (WRC-19)

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)

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

5.555C The use of the frequency band 51.4-52.4 GHz by the fixed-satellite service (Earth-to-space) is limited to geostationary-satellite networks. The earth stations shall be limited to gateway earth stations with a minimum antenna diameter of 2.4 metres. (WRC-19)

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

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

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

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

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

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

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

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

5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution **241 (WRC-19)** applies. (WRC-19)

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

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

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

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

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

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

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

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

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

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

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

5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed -144 dB(W/(m^2 · MHz)) for all angles of arrival. (WRC-2000)

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

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

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

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

The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution **731 (Rev.WRC-19)**.

In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis in accordance with Resolution **731 (Rev.WRC-19)**.

The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz. (WRC-19).

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

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these

passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

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

3. Amendment History

Issue	Date	Description of Amendment	Authoriesd by
4	May 2001	• Formal adoption of joint ITU and New Zealand Table of Allocations format. • Incorporates Article 5 from IRR, edition of 1998.	GH Railton Manager Engineering Services
5	August 2004	• Incorporates changes to the IRR resulting from WRC-2000 and WRC-2003, and • Changes to New Zealand use during the period between issues.	B Miller Manager Radio Spectrum Policy and Planning
6	December 2011	• Incorporates changes to the IRR resulting from WRC-2007 • Changes to New Zealand usage during the period between issues.	L Starling Manager Radio Spectrum Policy and Planning
7	March 2014	• Incorporates changes to the IRR resulting from WRC-2012 • Changes to New Zealand use during the period between issues.	L Starling Manager Radio Spectrum Policy and Planning
7.01	March 2014	• Minor editorial changes.	L Starling Manager Radio Spectrum Policy and Planning
8	August 2015	• Consequential changes in alignment with various updates for General User Licences.	L Starling Manager Radio Spectrum Policy and Planning
8.01	November 2015	• Minor editorial changes resulting from the 2015 Fixed Services review.	L Starling Manager Radio Spectrum Policy and Planning
9	January 2017	• Incorporates changes to the IRR resulting from WRC-2015. • Minor editorial changes.	L Starling Manager Radio Spectrum Policy and Planning
9.1	June 2017	• Consequential changes in alignment with various updates for General User Licences. • Minor editorial changes.	F Johnson A/g Manager Radio Spectrum Policy and Planning
10	May2019	• Changes to New Zealand use during the period between issues. • Consequential changes in alignment with various updates for General User Licences.	L Starling Manager Radio Spectrum Policy and Planning
11	June 2021	• Incorporates changes to the IRR resulting from WRC-2019. • Minor editorial changes. • Consequential changes in alignment with various updates for mobile operations	L Starling Manager Radio Spectrum Policy and Planning