

FEDERAL COMMUNICATIONS COMMISSION**47 CFR Part 2**

[DA 02-1872]

Non-Substantive Revisions to the Table of Frequency Allocation**AGENCY:** Federal Communications Commission.**ACTION:** Final rule.

SUMMARY: This document revises the Commission's Table of Frequency Allocations ("Allocation Table"). Specifically, it updates the International Table of Frequency Allocations ("International Table"). In order to assist the Federal Register staff in codifying international footnotes and in order to prevent confusion to the public, we are updating the Commission's Allocation Table in its entirety in order to remove the "S" prefix from the international footnotes. We also take this opportunity to update the International Table within our rules to reflect the Table of Frequency Allocations as it is found in the ITU Radio Regulations. The Commission believes that this action will assist users of the Allocation Table with their spectrum planning.

DATES: Effective September 23, 2002.

FOR FURTHER INFORMATION CONTACT: Tom Mooring, (202) 418-2450, or Shameeka Parrott, (202) 418-2062, Policy and Rules Division, Office of Engineering and Technology.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *Order*, DA 02-1872, adopted August 1, 2002, and released August 5, 2002. The full text of this document is available for inspection and copying during regular business hours in the FCC Reference Center (Room CY-A257), 445 12th Street, SW., Washington, DC 20554. The complete text of this document also may be purchased from the Commission's copy contractor, Qualex International, 445 12th Street, SW., Room, CY-B402, Washington, DC 20554. The full text may also be downloaded at: <http://www.fcc.gov>. Alternative formats are available to persons with disabilities by contacting Brian Millin at (202) 418-7426 or TTY (202) 418-7365.

Summary of the Order

1. This *Order* amends the Commission's Table of Frequency Allocations ("Allocation Table") to update the International Table of Frequency Allocations ("International Table"). The International Table is provided in § 2.106 of our Rules for

informational purposes only and is being updated to reflect the 2001 International Telecommunication Union ("ITU") *Radio Regulations*. As a consequence of updating the international footnotes within the International Table, we are also revising footnote US342 (which concerns the protection of the radio astronomy service ("RAS") in various frequency bands allocated to other services) and are re-numbering the existing versions of nine revised international footnotes as United States footnotes, thereby maintaining the status quo for the United States Table of Frequency Allocations ("United States Table") until the Commission can consider the substantive changes in future proceedings. This ministerial action does not make any substantive changes to our Allocation Table and thus, does not change any licensee's legal rights or responsibilities.

2. The Commission's Allocation Table, which is codified at § 2.106 of our rules, consists of three tables: the International Table, the United States Table, and cross references to other parts of our rules.

International Table

3. For the allocation of frequencies, the ITU has divided the world into three Regions and codifies the allocations for these Regions in its Table of Frequency Allocations. In § 2.106 of our rules, the ITU's Table of Frequency Allocations has been re-named as the International Table. The International Table is subdivided into the Region 1 Table (column 1), the Region 2 Table (column 2), and the Region 3 Table (column 3). The International Table is included in our rules for informational purposes only.

4. The ITU *Radio Regulations*, Edition of 2001, became effective internationally on January 1, 2002, except as provided in the references in Article 59. We are updating § 2.100 of our rules to reflect this fact. In its 2001 *Radio Regulations*, the ITU modified the international footnotes to its Table of Frequency Allocations by deleting the "S" prefix. For example, international footnote S5.53 was revised as international footnote 5.53. In addition, the ITU modified certain international footnotes to remove the "S" prefix from references to the *Radio Regulations*. For example, Article S31 was revised as Article 31 in footnote 5.110.

5. In order to assist the Federal Register in codifying international footnotes and in order to prevent confusion to the public, we are updating the Commission's Allocation Table in its entirety in order to remove the "S"

prefix from the international footnotes. In addition, we take this opportunity to update the International Table within our rules to reflect the Table of Frequency Allocations as it is found in the ITU *Radio Regulations*, Edition of 2001, Article 5, Section IV. We believe that this action will assist users of the Allocation Table with their spectrum planning.

Ministerial Changes to the United States Table

6. In the United States, radio spectrum may be allocated to either Federal Government or non-Federal Government use exclusively, or for shared use. As such, the United States Table is subdivided into the Federal Government Table of Frequency Allocations ("Federal Government Table") and the Non-Federal Government Table of Frequency Allocations ("Non-Federal Government Table"). The Federal Government Table (column 4) is administered by the National Telecommunications and Information Administration ("NTIA"), whereas the Non-Federal Government Table (column 5) is administered by the Commission.

7. Over the course of time, the Commission has adopted numerous international footnotes domestically and added them to the United States Table. We have reviewed each of these international footnotes. In order to update the International Table without making substantive changes to the United States Table, we have revised footnote US342 (which concerns the protection of the RAS in various frequency bands allocated to other services) and are re-numbering the existing versions of nine revised international footnotes as United States footnotes until such time as the Commission can consider these allocation changes to the United States Table.

Administrative Procedures Act Requirements and Ordering Clause

8. The International Table and FCC rule part(s) are included in the Commission's rules for informational purposes only. The United States Table is amended herein by incorporating non-substantive, editorial revisions only. Therefore, there is good cause for not using notice and comment procedure in this case, and for shortening the effective date of the amendments from a date not less than 30 days after publication in the **Federal Register** to the date of such publication. We find that the normal procedures for notice and comment and for publication as required under Section 553 of the

Administrative Procedures Act would be impracticable, unnecessary, or contrary to the public interest. *See* 5 U.S.C. 553(b)(3)(B), (d)(3); *Kessler v. FCC*, 326 F.2d 673 (D.C. Cir. 1963).

9. Part 2 of the Commission's rules, 47 CFR part 2, IS AMENDED as set forth, effective September 23, 2002. This action is taken pursuant to authority found in §§ 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i) and 303, and in §§ 0.31, 0.231(b) and 0.241 of the Commission's rules, 47 CFR 0.31, 0.231(b) and 0.241.

List of Subjects in 47 CFR Part 2

Radio, Reporting and recordkeeping requirements.

Federal Communications Commission.

Marlene H. Dortch,
Secretary.

Rule Changes

For the reasons discussed in the preamble, the Federal Communications

Commission amends 47 CFR part 2 as follows:

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL

Rules and Regulations

1. The authority citation for Part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.100 is revised to read as follows:

§ 2.100 International regulations in force.

The International Radiocommunication Union *Radio Regulations*, Edition of 2001, became effective internationally on January 1, 2002, except as provided in the references in Article 59.

3. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. The Table proceeding the international footnotes is revised and shall begin on the left-hand page.

b. The international footnote section is amended by revising the note immediately following the heading and by revising the list of international footnotes under heading I.

c. In the list of international footnotes under heading II, remove footnote 909.

d. In the list of United States footnotes, revise footnotes US342 and US356; and add footnotes US369, US370, US371, US372, US373, US374, US375, US376, and US377.

e. In the list of non-Federal Government footnotes, revise footnote NG143.

§ 2.106 Table of Frequency Allocations.

The revisions and additions read as follows:

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0-130 kHz (VLF/LF)				Page 1	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
Below 9 (Not allocated)			Below 9 (Not allocated)		
5.53 5.54			5.53 5.54		
9-14			9-14		
RADIONAVIGATION			RADIONAVIGATION		
14-19.95			US18 US294		
FIXED			14-19.95	14-19.95	International Fixed (23)
MARITIME MOBILE 5.57			FIXED	Fixed	
5.55 5.56			MARITIME MOBILE 5.57		
19.95-20.05			US294	US294	
STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)			19.95-20.05		
			STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)		
20.05-70			US294		
FIXED			20.05-59	20.05-59	International Fixed (23)
MARITIME MOBILE 5.57			FIXED	FIXED	
			MARITIME MOBILE 5.57		
			US294	US294	
			59-61		
			STANDARD FREQUENCY AND TIME SIGNAL (60 kHz)		
			US294		
			61-70	61-70	International Fixed (23)
			FIXED	FIXED	
			MARITIME MOBILE 5.57		
			US294	US294	
5.56 5.58					
70-72					
RADIONAVIGATION 5.60					
70-90					
FIXED					
MARITIME MOBILE 5.57					
MARITIME RADIO-NAVIGATION 5.60					
Radiolocation					
70-72					
FIXED					
MARITIME MOBILE 5.57					
MARITIME RADIO-NAVIGATION 5.60					
Radiolocation					
72-84					
FIXED					
MARITIME MOBILE 5.57					
RADIONAVIGATION 5.60					
5.56					

84-86 RADIONAVIGATION 5.60	84-86 RADIONAVIGATION 5.60 Fixed Maritime mobile 5.57	5.59	5.60 US294	5.60 US294	Private Land Mobile (90)
86-90 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION	86-90 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60	5.61	90-110 RADIONAVIGATION 5.62	5.60 US294	Private Land Mobile (90)
5.56			US18 US104 US294		
90-110 RADIONAVIGATION 5.62 Fixed			110-130 FIXED MARITIME MOBILE Radiolocation		International Fixed (23) Maritime (80) Private Land Mobile (90)
5.64					
110-112 FIXED MARITIME MOBILE RADIONAVIGATION	110-112 FIXED MARITIME MOBILE RADIONAVIGATION 5.60 Radiolocation	110-112 FIXED MARITIME MOBILE RADIONAVIGATION 5.60			
5.64		5.64			
112-115 RADIONAVIGATION 5.60		112-117.6 RADIONAVIGATION 5.60 Fixed Maritime mobile			
115-117.6 RADIONAVIGATION 5.60 Fixed Maritime mobile		5.64 5.65			
5.64 5.66		117.6-126 FIXED MARITIME MOBILE RADIONAVIGATION 5.60			
117.6-126 FIXED MARITIME MOBILE RADIONAVIGATION 5.60		5.64			
5.64		126-129 RADIONAVIGATION 5.60 Fixed Maritime mobile			
126-129 RADIONAVIGATION 5.60		5.64 5.65			
See next page for 129-130		See next page for 129-130	5.60 5.64 US294		

130-505 kHz (LF/MF)					Page 3	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
129-130 FIXED MARITIME MOBILE RADIONAVIGATION 5.60	See previous page for 110-130 kHz	129-130 FIXED MARITIME MOBILE RADIONAVIGATION 5.60	See previous page for 110-130 kHz		See previous page for 110-130 kHz	
5.64		5.64				
130-148.5 FIXED MARITIME MOBILE	130-160 FIXED MARITIME MOBILE	130-160 FIXED MARITIME MOBILE RADIONAVIGATION	130-160 FIXED MARITIME MOBILE		International Fixed (23) Maritime (80)	
5.64 5.67	5.64	5.64	5.64 US294			
148.5-255 BROADCASTING	160-190 FIXED	160-190 FIXED Aeronautical radionavigation	160-190 FIXED MARITIME MOBILE	160-190 FIXED	International Fixed (23)	
			459 US294	459 US294		
	190-200 AERONAUTICAL RADIONAVIGATION		190-200 AERONAUTICAL RADIONAVIGATION		Aviation (87)	
5.68 5.69 5.70			US18 US226 US294			
255-283.5 BROADCASTING AERONAUTICAL RADIONAVIGATION	200-275 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	200-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	200-275 AERONAUTICAL RADIONAVIGATION Aeronautical mobile			
5.70 5.71	275-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile (radiobeacons)		US18 US294			
283.5-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	275-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons)		275-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons)			
5.72 5.74	285-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	285-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	US18 US294	285-325 MARITIME RADIONAVIGATION (radiobeacons) 5.73 Aeronautical radionavigation (radiobeacons)		

315-325 AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73	315-325 MARITIME RADIONAVIGATION (radiobeacons) 5.73 Aeronautical radionavigation	315-325 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGA- TION (radiobeacons) 5.73	US18 US294	Maritime (80) Aviation (87)
5.72 5.75				
325-405 AERONAUTICAL RADIONAVIGATION	325-335 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons)	325-405 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	325-335 AERONAUTICAL RADIONAVIGATION (radiobeacons) Aeronautical mobile Maritime radionavigation (radiobeacons)	
5.72			US18 US294	
405-415 RADIONAVIGATION 5.76	405-415 RADIONAVIGATION 5.76 Aeronautical mobile		335-405 AERONAUTICAL RADIONAVIGATION (radiobeacons) Aeronautical mobile US18 US294	Maritime (80) Aviation (87)
5.72			405-415 RADIONAVIGATION 5.76 Aeronautical mobile US18 US294	
415-435 MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	415-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.80		415-435 MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.80 US294	
5.72			435-495 MARITIME MOBILE 5.79 Aeronautical radionavigation	
435-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation	5.77 5.78 5.82		435-495 MARITIME MOBILE 5.79 471 472A US231 US294 471 472A US231 US294	Maritime (80)
5.72 5.82			495-505 MOBILE (distress and calling)	
495-505 MOBILE (distress and calling)			472	
5.83				

505-2107 kHz (MF)					Page 5	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	505-510 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile	505-510 MARITIME MOBILE 5.79 471		Maritime (80)	
510-525 MOBILE 5.79A 5.84 AERONAUTICAL RADIONAVIGATION			510-525 MARITIME MOBILE (ships only) 474 AERONAUTICAL RADIONAVIGATION (radiobeacons) US14 US18 US225		Maritime (80) Aviation (87)	
525-535 BROADCASTING 5.86 AERONAUTICAL RADIONAVIGATION		526.5-535 BROADCASTING Mobile	525-535 AERONAUTICAL RADIONAVIGATION (radiobeacons) MOBILE US221		Aviation (87) Private Land Mobile (90)	
535-1605 BROADCASTING		535-1606.5 BROADCASTING	US18 US239			
5.87 5.87A 1606.5-1625 FIXED MARITIME MOBILE 5.90 LAND MOBILE	1605-1625 BROADCASTING 5.89	1606.5-1800 FIXED MOBILE RADIOLOCATION RADIONAVIGATION	535-1605 BROADCASTING US321	535-1605 BROADCASTING US321	Radio Broadcasting (AM) (73) Auxiliary Broadcasting (74)	
5.92 1625-1635 RADIOLOCATION	1605-1625 BROADCASTING 5.89	1606.5-1800 FIXED MOBILE RADIOLOCATION RADIONAVIGATION	1605-1615 MOBILE US221 US238	1605-1705 BROADCASTING 480	Alaska Fixed (80) Private Land Mobile (90)	
5.93 1635-1800 FIXED MARITIME MOBILE 5.90 LAND MOBILE	1625-1705 FIXED MOBILE BROADCASTING 5.89 Radiolocation 5.90		1615-1625 US238 US299 Radiolocation			
			US238 US299	US238 US299 US321 NG128		

5.92 5.96	1705-1800 FIXED MOBILE RADIOLOCATION AERONAUTICAL RADIO NAVIGATION	5.91	1705-1800 FIXED MOBILE RADIOLOCATION US240	International Fixed (23) Maritime (80) Private Land Mobile (90)
1800-1810 RADIOLOCATION	1800-1850 AMATEUR	1800-2000 AMATEUR FIXED MOBILE except aeronautical mobile RADIO NAVIGATION Radiolocation	1800-1900 AMATEUR	Amateur (97)
5.93	1810-1850 AMATEUR			
5.98 5.99 5.100 5.101	1850-2000 FIXED MOBILE except aeronautical mobile		1900-2000 RADIOLOCATION	Private Land Mobile (90) Amateur (97)
5.92 5.96 5.103	2000-2025 FIXED MOBILE except aeronautical mobile (R)	5.97	US290	Maritime (80)
5.92 5.103	2025-2045 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104		2000-2065 FIXED MOBILE	
5.92 5.103	2045-2160 FIXED MARITIME MOBILE LAND MOBILE		US340	
5.92	2065-2107 MARITIME MOBILE 5.105 5.106 See next page for 2107-2170 kHz		2065-2107 MARITIME MOBILE 5.105 US296 US340 See next page for 2107-2170 kHz	See next page

2107-3230 kHz (MF/HF)				Page 7	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 2045-2160 kHz	2107-2170 FIXED MOBILE		2107-2170 FIXED MOBILE	2107-2170 FIXED LAND MOBILE MARITIME MOBILE NG19	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
2160-2170 RADIOLOCATION					
5.93 5.107			US340	US340	
2170-2173.5 MARITIME MOBILE			2170-2173.5 MARITIME MOBILE (telephony)	2170-2173.5 MARITIME MOBILE	Maritime (80)
2173.5-2190.5 MOBILE (distress and calling)			US340	US340	
5.108 5.109 5.110 5.111			2173.5-2190.5 MOBILE (distress and calling)		Maritime (80) Aviation (87)
2190.5-2194 MARITIME MOBILE			5.108 5.109 5.110 5.111 US279 US340	2190.5-2194 MARITIME MOBILE	Maritime (80)
2194-2300 FIXED MOBILE except aeronautical mobile (R)	2194-2300 FIXED MOBILE		2194-2495 FIXED MOBILE	2194-2495 FIXED LAND MOBILE MARITIME MOBILE NG19	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
5.92 5.103 5.112	5.112		US340	US340	
2300-2498 FIXED MOBILE except aeronautical mobile (R)	2300-2495 FIXED MOBILE BROADCASTING 5.113		US340	US340	
BROADCASTING 5.113	2495-2501 STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)		2495-2501 STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)	2495-2501 STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)	
5.103			US340	US340	
2498-2501 STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz)					

2501-2502 STANDARD FREQUENCY AND TIME SIGNAL Space research	2501-2502 STANDARD FREQUENCY AND TIME SIGNAL US340 G106	2501-2502 STANDARD FREQUENCY AND TIME SIGNAL US340	
2502-2625 FIXED MOBILE except aeronautical mobile (R)	2502-2505 STANDARD FREQUENCY AND TIME SIGNAL US340	2502-2505 STANDARD FREQUENCY AND TIME SIGNAL US340	
5.92 5.103 5.114 2625-2650 MARITIME MOBILE RADIONAVIGATION	2505-2850 FIXED MOBILE	2505-2850 FIXED LAND MOBILE MARITIME MOBILE	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
5.92 2650-2850 FIXED MOBILE except aeronautical mobile (R)	US285 US340	US285 US340	
5.92 5.103 2850-3025 AERONAUTICAL MOBILE (R)	2850-3025 AERONAUTICAL MOBILE (R)		Aviation (87)
5.111 5.115 3025-3155 AERONAUTICAL MOBILE (OR)	5.111 5.115 US283 US340 3025-3155 AERONAUTICAL MOBILE (OR) US340		
3155-3200 FIXED MOBILE except aeronautical mobile (R)	3155-3230 FIXED MOBILE except aeronautical mobile (R)		International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
5.116 5.117 3200-3230 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113			
5.116	US340		

3230-5060 kHz (HF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3		United States Table		Page 9
3230-3400 FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118				3230-3400 FIXED MOBILE except aeronautical mobile Radiolocation US340		International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
3400-3500 AERONAUTICAL MOBILE (R)				3400-3500 AERONAUTICAL MOBILE (R) US283 US340		Aviation (87)
3500-3800 AMATEUR FIXED MOBILE except aeronautical mobile 5.92	3500-3750 AMATEUR 5.119 3750-4000 AMATEUR FIXED MOBILE except aeronautical mobile (R)	3500-3900 AMATEUR FIXED MOBILE		3500-4000 AMATEUR 5.120		Amateur (97)
3800-3900 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE						
3900-3950 AERONAUTICAL MOBILE (OR)		3900-3950 AERONAUTICAL MOBILE BROADCASTING				
5.123						
3950-4000 FIXED BROADCASTING		3950-4000 FIXED BROADCASTING				
4000-4063 FIXED MARITIME MOBILE 5.127		5.122 5.125	5.126	US340 4000-4063 MARITIME MOBILE	US340	International Fixed (23) Maritime (80)
5.126				US236 US340		
4063-4438 MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128 5.129				4063-4438 MARITIME MOBILE 5.109 5.110 5.130 5.132 US82 US296 US340		

4438-4650 FIXED MOBILE except aeronautical mobile (R)	4438-4650 FIXED MOBILE except aeronautical mobile	4438-4650 FIXED MOBILE except aeronautical mobile (R) US340	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
4650-4700 AERONAUTICAL MOBILE (R)		4650-4700 AERONAUTICAL MOBILE (R) US282 US283 US340	Aviation (87)
4700-4750 AERONAUTICAL MOBILE (OR)		4700-4750 AERONAUTICAL MOBILE (OR) US340	
4750-4850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	4750-4850 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113	4750-4850 FIXED MOBILE except aeronautical mobile (R) US340	International Fixed (23) Maritime (80) Aviation (87)
4850-4995 FIXED LAND MOBILE BROADCASTING 5.113		4850-4995 FIXED MOBILE US340	
4995-5003 STANDARD FREQUENCY AND TIME SIGNAL (5000 kHz)		4995-5003 STANDARD FREQUENCY AND TIME SIGNAL (5000 kHz) US340	
5003-5005 STANDARD FREQUENCY AND TIME SIGNAL Space research		5003-5005 STANDARD FREQUENCY AND TIME SIGNAL 5003-5005 STANDARD FREQUENCY AND TIME SIGNAL US340 G106 US340	
5005-5060 FIXED BROADCASTING 5.113		5005-5060 FIXED US340	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)

5060-9040 kHz (HF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3		5060-5450 FIXED Mobile except aeronautical mobile	5060-5450 FIXED Mobile except aeronautical mobile	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
5.133					US212 US340	
5250-5450 FIXED MOBILE except aeronautical mobile					5450-5480 AERONAUTICAL MOBILE (R)	Aviation (87)
5450-5480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	5450-5480 AERONAUTICAL MOBILE (R)	5450-5480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE		US283 US340		
5480-5680 AERONAUTICAL MOBILE (R)				5480-5680 AERONAUTICAL MOBILE (R)		
5.111 5.115				5.111 5.115 US283 US340		
5680-5730 AERONAUTICAL MOBILE (OR)				5680-5730 AERONAUTICAL MOBILE (OR)		
5.111 5.115				5.111 5.115 US340		
5730-5900 FIXED LAND MOBILE	5730-5900 FIXED MOBILE except aeronautical mobile (R)			5730-5950 FIXED MOBILE except aeronautical mobile (R)		International Fixed (23) Maritime (80) Aviation (87)
5900-5950 BROADCASTING 5.134						
5.136				US340		
5950-6200 BROADCASTING				5950-6200 BROADCASTING		Radio Broadcast (HF) (73)
6200-6525 MARITIME MOBILE 5.109 5.110 5.130 5.132				6200-6525 MARITIME MOBILE 5.109 5.110 5.130 5.132		Maritime (80)
5.137				US82 US296 US340		
6525-6685 AERONAUTICAL MOBILE (R)				6525-6685 AERONAUTICAL MOBILE (R)		Aviation (87)
				US283 US340		

6685-6765 AERONAUTICAL MOBILE (OR)	6685-6765 AERONAUTICAL MOBILE (OR)	
6765-7000 FIXED Land mobile 5.139	US340 6765-7000 FIXED Mobile	ISM Equipment (18) International Fixed (23) Aviation (87)
5.138	5.138 US340	
7000-7100 AMATEUR AMATEUR-SATELLITE	7000-7100 AMATEUR 5.120 AMATEUR-SATELLITE	Amateur (97)
5.140 5.141	US340	
7100-7300 BROADCASTING	7100-7300 AMATEUR 5.120	
5.142	5.142 US340	
7300-7350 BROADCASTING 5.134	7300-8100 FIXED Mobile	International Fixed (23) Maritime (80) Aviation (87) Private Land Mobile (90)
5.143		
7350-8100 FIXED Land mobile		
5.144	US340	
8100-8195 FIXED MARITIME MOBILE	8100-8195 MARITIME MOBILE	Maritime (80)
8195-8815 MARITIME MOBILE 5.109 5.110 5.132 5.145	US236 US340 8195-8815 MARITIME MOBILE 5.109 5.110 5.132 5.145	
5.111	5.111 US82 US296 US340	
8815-8965 AERONAUTICAL MOBILE (R)	8815-8965 AERONAUTICAL MOBILE (R)	Aviation (87)
8965-9040 AERONAUTICAL MOBILE (OR)	US340 8965-9040 AERONAUTICAL MOBILE (OR)	

9040-13410 kHz (HF)				Page 13	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
9040-9400 FIXED			9040-9500 FIXED		International Fixed (23) Maritime (80) Aviation (87)
9400-9500 BROADCASTING 5.134					
5.146			US340		
9500-9900 BROADCASTING			9500-9900 BROADCASTING		International Fixed (23) Radio Broadcast (HF) (73)
5.147			5.147 5.148 US235 US340		
9900-9995 FIXED			9900-9995 FIXED		International Fixed (23) Aviation (87)
			US340		
9995-10003 STANDARD FREQUENCY AND TIME SIGNAL (10000 kHz)			9995-10003 STANDARD FREQUENCY AND TIME SIGNAL (10000 kHz)		
5.111			5.111 US340		
10003-10005 STANDARD FREQUENCY AND TIME SIGNAL Space research			10003-10005 STANDARD FREQUENCY AND TIME SIGNAL	10003-10005 STANDARD FREQUENCY AND TIME SIGNAL	
5.111			5.111 US340 G106	5.111 US340	
10005-10100 AERONAUTICAL MOBILE (R)			10005-10100 AERONAUTICAL MOBILE (R)		Aviation (87)
5.111			5.111 US283 US340		
10100-10150 FIXED Amateur			10100-10150 FIXED AMATEUR 5.120	10100-10150 AMATEUR 5.120	Amateur (97)
10150-11175 FIXED Mobile except aeronautical mobile (R)			US247 US340	US247 US340	
			10150-11175 FIXED Mobile except aeronautical mobile (R)		International Fixed (23) Aviation (87)
			US340		
11175-11275 AERONAUTICAL MOBILE (OR)			11175-11275 AERONAUTICAL MOBILE (OR)		
			US340		

11275-11400 AERONAUTICAL MOBILE (R)	11275-11400 AERONAUTICAL MOBILE (R)	Aviation (87)
11400-11600 FIXED	US283 US340	
11600-11650 BROADCASTING 5.134 5.146	11400-11650 FIXED	International Fixed (23) Aviation (87)
11650-12050 BROADCASTING	US340	
5.147	11650-12050 BROADCASTING	International Fixed (23) Radio Broadcast (HF) (73)
12050-12100 BROADCASTING 5.134	US235 US340	
5.146	12050-12230 FIXED	International Fixed (23) Aviation (87)
12100-12230 FIXED	US340	
12230-13200 MARITIME MOBILE 5.109 5.110 5.132 5.145	12230-13200 MARITIME MOBILE 5.109 5.110 5.132 5.145	International Fixed (23) Maritime (80)
13200-13260 AERONAUTICAL MOBILE (OR)	US82 US296 US340	
	13200-13260 AERONAUTICAL MOBILE (OR)	
13260-13360 AERONAUTICAL MOBILE (R)	US340	Aviation (87)
	13260-13360 AERONAUTICAL MOBILE (R)	
13360-13410 FIXED RADIO ASTRONOMY	US283 US340	
5.149	13360-13410 RADIO ASTRONOMY	13360-13410 RADIO ASTRONOMY
	5.149 G115	5.149

13410-17900 kHz (HF)				Page 15	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
13410-13570 FIXED Mobile except aeronautical mobile (R)			13410-13570 FIXED Mobile except aeronautical mobile (R)	13410-13570 FIXED	ISM Equipment (18) International Fixed (23) Aviation (87)
5.150			5.150 US340	5.150 US340	
13570-13600 BROADCASTING 5.134			13570-13600 FIXED Mobile except aeronautical mobile (R)	13570-13600 FIXED	International Fixed (23) Aviation (87)
5.151			US340	US340	
13600-13800 BROADCASTING			13600-13800 BROADCASTING		International Fixed (23) Radio Broad. (HF) (73)
13800-13870 BROADCASTING 5.134			5.148 US340		
5.151			13800-14000 FIXED Mobile except aeronautical mobile (R)	13800-14000 FIXED	International Fixed (23) Aviation (87)
13870-14000 FIXED Mobile except aeronautical mobile (R)			US340	US340	
14000-14250 AMATEUR AMATEUR-SATELLITE			14000-14350	14000-14250 AMATEUR 5.120 AMATEUR-SATELLITE	Amateur (97)
14250-14350 AMATEUR				US340 14250-14350 AMATEUR 5.120	
5.152			US340	US340	
14350-14990 FIXED Mobile except aeronautical mobile (R)			14350-14990 FIXED Mobile except aeronautical mobile (R)	14350-14990 FIXED	International Fixed (23) Aviation (87)
14990-15005 STANDARD FREQUENCY AND TIME SIGNAL (15000 kHz)			US340	US340	
5.111			14990-15005 STANDARD FREQUENCY AND TIME SIGNAL (15000 kHz)		
			5.111 US340		

15005-15010 STANDARD FREQUENCY AND TIME SIGNAL Space research	15005-15010 STANDARD FREQUENCY AND TIME SIGNAL US340 G106	15005-15010 STANDARD FREQUENCY AND TIME SIGNAL US340	
15010-15100 AERONAUTICAL MOBILE (OR)	15010-15100 AERONAUTICAL MOBILE (OR) US340		
15100-15600 BROADCASTING	15100-15600 BROADCASTING 5.148 US340		International Fixed (23) Radio Broadcast (HF) (73)
15600-15800 BROADCASTING 5.134 5.146	15600-16360 FIXED		International Fixed (23) Aviation (87)
15800-16360 FIXED			
5.153	US340		
16360-17410 MARITIME MOBILE 5.109 5.110 5.132 5.145	16360-17410 MARITIME MOBILE 5.109 5.110 5.132 5.145 US82 US296 US340		Maritime (80)
17410-17480 FIXED	17410-17550 FIXED		International Fixed (23) Aviation (87)
17480-17550 BROADCASTING 5.134 5.146	US340		
17550-17900 BROADCASTING	17550-17900 BROADCASTING 5.148 US340		International Fixed (23) Radio Broadcast (HF) (73)

17900-22855 kHz (HF)				Page 17	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
17900-17970 AERONAUTICAL MOBILE (R)			17900-17970 AERONAUTICAL MOBILE (R)		Aviation (87)
			US283 US340		
17970-18030 AERONAUTICAL MOBILE (OR)			17970-18030 AERONAUTICAL MOBILE (OR)		
			US340		
18030-18052 FIXED			18030-18068 FIXED		International Fixed (23) Maritime (80)
18052-18068 FIXED					
Space research			US340		
18068-18168 AMATEUR AMATEUR-SATELLITE			18068-18168	18068-18168 AMATEUR 5.120 AMATEUR-SATELLITE	International Fixed (23) Amateur (97)
5.154			US340	US340	
18168-18780 FIXED			18168-18780 FIXED		International Fixed (23) Maritime (80) Aviation (87)
Mobile except aeronautical mobile			Mobile		
			US340		
18780-18900 MARITIME MOBILE			18780-18900 MARITIME MOBILE		International Fixed (23) Maritime (80)
			US82 US296 US340		
18900-19020 BROADCASTING 5.134			18900-19680 FIXED		International Fixed (23) Aviation (87)
5.146					
19020-19680 FIXED			US340		
19680-19800 MARITIME MOBILE 5.132			19680-19800 MARITIME MOBILE 5.132		Maritime (80)
			US340		
19800-19990 FIXED			19800-19990 FIXED		International Fixed (23) Aviation (87)
			US340		

1990-1995 STANDARD FREQUENCY AND TIME SIGNAL Space research	1990-1995 STANDARD FREQUENCY AND TIME SIGNAL Space research G106	1990-1995 STANDARD FREQUENCY AND TIME SIGNAL Space research	
5.111	5.111 US340	5.111 US340	
1995-2010 STANDARD FREQUENCY AND TIME SIGNAL (20000 kHz)	1995-2010 STANDARD FREQUENCY AND TIME SIGNAL (20000 kHz)	1995-2010 STANDARD FREQUENCY AND TIME SIGNAL (20000 kHz)	
5.111	5.111 US340 G106	5.111 US340	
2010-2100 FIXED Mobile	2010-2100 FIXED Mobile	2010-2100 FIXED	
2100-2145 AMATEUR AMATEUR-SATELLITE	2100-2145 US340	US340	Amateur (97)
2145-2185 BROADCASTING	2145-2185 BROADCASTING	2145-2185 AMATEUR 5.120 AMATEUR-SATELLITE	
2185-2187 FIXED 5.155A	2185-2187 FIXED	US340	International Fixed (23) Radio Broadcast (HF) (73)
5.155	5.148 US340		International Fixed (23) Aviation (87)
2187-2192 FIXED 5.155B	2187-2192 FIXED		
2192-2200 AERONAUTICAL MOBILE (R)	2192-2200 AERONAUTICAL MOBILE (R)		Aviation (87)
2200-2285 MARITIME MOBILE 5.132	2200-2285 MARITIME MOBILE 5.132		International Fixed (23) Maritime (80)
5.156	US82 US296 US340		

22855-26175 kHz (HF)				Page 19	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
22855-23000 FIXED			22855-23000 FIXED		International Fixed (23) Aviation (87)
5.156			US340		
23000-23200 FIXED			23000-23200 FIXED	23000-23200 FIXED	
Mobile except aeronautical mobile (R)			Mobile except aeronautical mobile (R)		
5.156			US340	US340	
23200-23350 FIXED 5.156A			23200-23350		
AERONAUTICAL MOBILE (OR)			AERONAUTICAL MOBILE (OR)		
23350-24000 FIXED			US340		
MOBILE except aeronautical mobile 5.157			23350-24890 FIXED	23350-24890 FIXED	International Fixed (23) Aviation (87)
24000-24890 FIXED			MOBILE except aeronautical mobile		
LAND MOBILE			US340	US340	
24890-24990 AMATEUR			24890-24990	24890-24990 AMATEUR 5.120 AMATEUR-SATELLITE	Amateur (97)
AMATEUR-SATELLITE			US340	US340	
24990-25005 STANDARD FREQUENCY AND TIME SIGNAL (25000 kHz)			24990-25005 STANDARD FREQUENCY AND TIME SIGNAL (25000 kHz)		
			US340		
25005-25010 STANDARD FREQUENCY AND TIME SIGNAL Space research			25005-25010 STANDARD FREQUENCY AND TIME SIGNAL	25005-25010 STANDARD FREQUENCY AND TIME SIGNAL	
			US340 G106	US340	
25010-25070 FIXED			25010-25070	25010-25070 LAND MOBILE	Private Land Mobile (90)
MOBILE except aeronautical mobile			US340	US340 NG112	

25070-25210 MARITIME MOBILE	25070-25210 MARITIME MOBILE	25070-25210 MARITIME MOBILE	Maritime (80) Private Land Mobile (90)
25210-25550 FIXED MOBILE except aeronautical mobile	US82 US281 US296 US340 NG112	US82 US281 US296 US340 NG112	Private Land Mobile (90)
	25210-25330 LAND MOBILE	25210-25330 LAND MOBILE	
	US340	US340	
	25330-25550 FIXED MOBILE except aeronautical mobile	25330-25550	
	US340	US340	
25550-25670 RADIO ASTRONOMY	25550-25670 RADIO ASTRONOMY US74		
5.149	5.149		
25670-26100 BROADCASTING	25670-26100 BROADCASTING		Radio Broadcast (HF) (73)
	US25 US340		Remote Pickup (74D)
26100-26175 MARITIME MOBILE 5.132	26100-26175 MARITIME MOBILE 5.132		Auxiliary Broadcasting (74)
	US340		Maritime (80)

25175-28000 kHz (HF)				Page 21		
International Table		Region 3		United States Table		FCC Rule Part(s)
Region 1	Region 2			Federal Government	Non-Federal Government	
26175-27500 FIXED MOBILE except aeronautical mobile				26175-26480	26175-26480 LAND MOBILE	Auxiliary Broadcasting (74)
				US340	US340	
				26480-26950 FIXED MOBILE except aeronautical mobile	26480-26950	
				US10 US340	US10 US340	
				26950-27410	26950-26960 FIXED	ISM Equipment (18) International Fixed (23)
					5.150 US340	
					26960-27230 MOBILE except aeronautical mobile	ISM Equipment (18) Personal Radio (95)
					5.150 US340	
					27230-27410 FIXED MOBILE except aeronautical mobile	ISM Equipment (18) Private Land Mobile (90) Personal Radio (95)
					5.150 US340	
5.150 27500-28000 METEOROLOGICAL AIDS FIXED MOBILE				27410-27540 FIXED LAND MOBILE	Private Land Mobile (90)	
				US340	US340	
				27540-28000 FIXED MOBILE	27540-28000	
				US298 US340	US298 US340	

28-33 MHz (HF/VHF)					FCC Rule Part(s)	
International Table			United States Table			
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
28-29.7 AMATEUR AMATEUR-SATELLITE			28-29.89	28-29.7 AMATEUR AMATEUR-SATELLITE US340	Amateur (97)	
29.7-30.005 FIXED MOBILE				29.7-29.8 LAND MOBILE US340	Private Land Mobile (90)	
			US340	29.8-29.89 FIXED	International Fixed (23) Aviation (87)	
			29.89-29.91 FIXED MOBILE	US340 29.89-29.91		
			US340	US340		
			29.91-30	29.91-30 FIXED	International Fixed (23) Aviation (87)	
			US340	US340		
30.005-30.01 SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH			30-30.56 FIXED MOBILE	30-30.56		
30.01-37.5 FIXED MOBILE			30.56-32	30.56-32 FIXED LAND MOBILE NG124	Private Land Mobile (90)	
			32-33 FIXED MOBILE	32-33		
			See next page for 33-37.5 MHz		See next page for 33-37.5 MHz	

33-50 MHz (VHF)				Page 23	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 30.01-37.5 MHz			33-34 FIXED LAND MOBILE	33-34 FIXED LAND MOBILE	Private Land Mobile (90)
37.5-38.25 FIXED MOBILE Radio astronomy			34-35 FIXED MOBILE	34-35	
			35-36	35-36 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
			36-37 FIXED MOBILE	36-37	
			US220	US220	
			37-37.5	37-37.5 LAND MOBILE	Private Land Mobile (90)
				NG124	
			37.5-38 Radio astronomy	37.5-38 LAND MOBILE Radio astronomy	
			5.149	5.149 NG59 NG124	
			38-38.25 FIXED MOBILE RADIO ASTRONOMY	38-38.25 RADIO ASTRONOMY	
			5.149 US81	5.149 US81	
38.25-39.986 FIXED MOBILE			38.25-39 FIXED MOBILE	38.25-39	
			39-40	39-40 LAND MOBILE	Private Land Mobile (90)
39.986-40.02 FIXED MOBILE Space research				NG124	
			40-42 FIXED MOBILE	40-40.98	ISM Equipment (18) Private Land Mobile (90)

40.02-40.98 FIXED MOBILE					
5.150				5.150 US210 40.98-42	
40.98-41.015 FIXED MOBILE Space research					
5.160 5.161				US220	
41.015-44 FIXED MOBILE		5.150 US210 US220 42-46.6		42-43.69 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
5.160 5.161				NG124 NG141	
44-47 FIXED MOBILE				43.69-46.6 LAND MOBILE	Private Land Mobile (90)
5.162 5.162A				NG124 NG141	
47-68 BROADCASTING				46.6-47 FIXED MOBILE	
	47-50 FIXED MOBILE BROADCASTING			47-49.6 LAND MOBILE	Private Land Mobile (90)
				NG124	
				49.6-50 FIXED MOBILE	
5.162A 5.163 5.164 5.165 5.169 5.171	See next page for 50-68 MHz	See next page for 50-73 MHz	See next page for 50-72 MHz	See next page for 50-72 MHz	See next page for 50-72 MHz

50-123.5875 MHz (VHF)				Page 25	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 47-68 MHz	50-54 AMATEUR		50-73	50-54 AMATEUR	Amateur (97)
	5.162A 5.166 5.167 5.168 5.170				
	54-68 BROADCASTING Fixed Mobile	54-68 FIXED MOBILE BROADCASTING		54-72 BROADCASTING	Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)
	5.172	5.162A			
68-74.8 FIXED MOBILE except aeronautical Mobile	68-72 BROADCASTING Fixed Mobile	68-74.8 FIXED MOBILE		NG128 NG149	
	5.173			72-73 FIXED MOBILE	Public Mobile (22) Private Land Mobile (90)
	72-73 FIXED MOBILE			NG3 NG49 NG56	Personal Radio (95)
	73-74.6 RADIO ASTRONOMY		73-74.6 RADIO ASTRONOMY US74		
	5.178				
5.149 5.174 5.175 5.177 5.179	74.6-74.8 FIXED MOBILE		74.6-74.8 FIXED MOBILE		Private Land Mobile (90)
		5.149 5.176 5.179	US273		
74.8-75.2 AERONAUTICAL RADIONAVIGATION			74.8-75.2 AERONAUTICAL RADIONAVIGATION		Aviation (87)
5.180 5.181			5.180		
75.2-87.5 FIXED MOBILE except aeronautical Mobile	75.2-75.4 FIXED MOBILE		75.2-75.4 FIXED MOBILE		Private Land Mobile (90)
	5.179		US273		

75.4-76 FIXED MOBILE	75.4-87 FIXED MOBILE	75.4-88	75.4-76 FIXED MOBILE	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
76-88 BROADCASTING Fixed Mobile	5.182.5.183.5.188 87-100 FIXED MOBILE BROADCASTING		NG3 NG49 NG56	Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)
5.175.5.179.5.184.5.187 87.5-100 BROADCASTING	5.185 88-100 BROADCASTING	88-108	76-88 BROADCASTING	
5.190 100-108 BROADCASTING		US93	NG128 NG129 NG149	Broadcast Radio (FM) (73) Auxiliary Broadcasting (74)
5.192.5.194 108-117.975 AERONAUTICAL RADIONAVIGATION		108-117.975 AERONAUTICAL RADIONAVIGATION		Note: The NTIA Manual (footnote G126) states that differential GPS stations may be author- ized in the 108-117.975 MHz band, but the FCC has not yet addressed this footnote.
5.197 117.975-137 AERONAUTICAL MOBILE (R)		US93		
		117.975-121.9375 AERONAUTICAL MOBILE (R)		Aviation (87)
		5.111.5.199.5.200.591.5.206.5.208 121.9375-123.0875	121.9375-123.0875 AERONAUTICAL MOBILE	
		591.5.30.5.31.5.33.5.80 US102.5.213	591.5.30.5.31.5.33.5.80 US102.5.213	
		123.0875-123.5875 AERONAUTICAL MOBILE		
		5.200.591.5.32.5.33.5.112 See next page for 123.5875-137 MHz		
5.111.5.198.5.199.5.200.5.201.5.202.5.203.5.203A.5.203B				See next page for 123.5875-137 MHz

123.5875-148 MHz (VHF)			United States Table		FCC Rule Part(s)
International Table		Region 3	Federal Government	Non-Federal Government	
Region 1	Region 2		123.5875-128.8125 AERONAUTICAL MOBILE (R)		Aviation (87)
See previous page for 117.975-137 MHz			591 US26		
			128.8125-132.0125	128.8125-132.0125 AERONAUTICAL MOBILE (R)	
			591	591	
			132.0125-136.00	AERONAUTICAL MOBILE (R)	Satellite Communications (25) Aviation (87)
			591 US26		
			136-137	136-137 AERONAUTICAL MOBILE (R)	
			591 US244	591 US244	
137-137 025			137-137 025		Satellite Communications (25)
SPACE OPERATION (space-to-Earth)			SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)			METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209			MOBILE-SATELLITE (space-to-Earth) 599B US318 US319 US320		
SPACE RESEARCH (space-to-Earth)			SPACE RESEARCH (space-to-Earth)		Satellite Communications (25)
Fixed					
Mobile except aeronautical mobile (R)					
5.204 5.205 5.206 5.207 5.208			599A		
137.025-137.175			137.025-137.175		Satellite Communications (25)
SPACE OPERATION (space-to-Earth)			SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)			METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)			SPACE RESEARCH (space-to-earth)		
Fixed			Mobile-satellite (space-to-Earth) 599B US318 US319 US320		Satellite Communications (25)
Mobile-satellite (space-to-Earth) 5.208A 5.209					
Mobile except aeronautical mobile (R)					
5.204 5.205 5.206 5.207 5.208			599A		
137.175-137.825			137.175-137.825		Satellite Communications (25)
SPACE OPERATION (space-to-Earth)			SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)			METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209			MOBILE-SATELLITE (space-to-Earth) 599B US318 US319 US320		
SPACE RESEARCH (space-to-Earth)			SPACE RESEARCH (space-to-Earth)		Satellite Communications (25)
Fixed					
Mobile except aeronautical mobile (R)					
5.204 5.205 5.206 5.207 5.208			599A		

137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.209 Mobile except aeronautical mobile (R)	137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) 599B US318 US319 US320				
5.204 5.205 5.206 5.207 5.208	599A				
138-143.6 AERONAUTICAL MOBILE (OR)	138-143.6 FIXED MOBILE	138-143.6 FIXED MOBILE Space research (space-to-Earth)	138-143.6 FIXED MOBILE Space research (space-to-Earth)	138-144 FIXED MOBILE	
5.210 5.211 5.212 5.214					
143.6-143.65 AERONAUTICAL MOBILE (OR)	143.6-143.65 FIXED MOBILE	143.6-143.65 FIXED MOBILE RADIOLOCATION SPACE RESEARCH (space-to-Earth)	143.6-143.65 FIXED MOBILE Space research (space-to-Earth)		
5.211 5.212 5.214					
143.65-144 AERONAUTICAL MOBILE (OR)	143.65-144 FIXED MOBILE	143.65-144 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	143.65-144 FIXED MOBILE Space research (space-to-Earth)		
5.210 5.211 5.212 5.214					
144-146 AMATEUR AMATEUR-SATELLITE	US10 G30 144-148			US10 144-146 AMATEUR 510 AMATEUR-SATELLITE	Amateur (97)
5.216					
146-148 FIXED MOBILE except aeronautical mobile (R)	146-148 AMATEUR	146-148 AMATEUR FIXED MOBILE	146-148 AMATEUR FIXED MOBILE	146-148 AMATEUR	
		5.217	5.217		

148-162.0125 MHz (VHF)				Page 29	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209	148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209		148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 599B US319 US320 US323 US325	148-149.9 MOBILE-SATELLITE (Earth-to-space) 599B US319 US320 US323 US325	Satellite Communications (25)
5.218 5.219 5.221	5.218 5.219 5.221		5.218 608A US10 G30	5.218 608A US10	
149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B			149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 599B US319 US322 RADIONAVIGATION-SATELLITE		
5.220 5.222 5.223			5.223 608B		
150.05-153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	150.05-156.7625 FIXED MOBILE		150.05-150.8 FIXED MOBILE	150.05-150.8	
			US216 G30	US216	
			150.8-152.855	150.8-152.855 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
5.149			US216	US216 NG4 NG51 NG112 NG124	
153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids			152.855-154	152.855-154 LAND MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)
154-156.7625 FIXED MOBILE except aeronautical Mobile (R)			154-156.2475	NG4 NG124	
			5.226	154-156.2475 FIXED LAND MOBILE	Maritime (80) Private Land Mobile (90) Personal Radio (95)
5.226 5.227	5.225 5.226 5.227		156.2475-157.0375	5.226 NG112 NG117 NG124 NG148	
				156.2475-157.0375 MARITIME MOBILE	

156.7625-156.8375 MARITIME MOBILE (distress and calling)	156.8375-174 FIXED MOBILE except aeronautical Mobile	5.226 5.227 US77 US106 US107 US266	5.226 5.227 US77 US106 US107 US266 NG117	
		157.0375-157.1875 MARITIME MOBILE	157.0375-157.1875	Private Land Mobile (90)
5.111 5.226 156.8375-174 FIXED MOBILE except aeronautical Mobile		5.226 US214 US266 G109 157.1875-157.45	5.226 US214 US266 157.1875-157.45 LAND MOBILE MARITIME MOBILE	Maritime (80) Private Land Mobile (90)
		5.226 US223 US266 157.45-161.575	5.226 US223 US266 NG111 157.45-161.575 FIXED LAND MOBILE	Public Mobile (22) Maritime (80) Private Land Mobile (90)
		5.226 US266 161.575-161.625	5.226 US266 NG6 NG28 NG70 NG111 NG112 NG124 NG148 NG155	
		161.575-161.625	161.575-161.625 MARITIME MOBILE	Public Mobile (22) Maritime (80)
		5.226 US77 161.625-161.775	5.226 US77 NG6 NG17 161.625-161.775 LAND MOBILE	Public Mobile (22) Auxiliary Broadcasting (74)
		5.226 161.775-162.0125	5.226 NG6 161.775-162.0125 LAND MOBILE MARITIME MOBILE	Public Mobile (22) Maritime (80) Private Land Mobile (90)
		5.226 US266 See next page for 162.0125-174 MHz	5.226 US266 NG6 See next page for 162.0125-174 MHz	See next page for 162.0125-174 MHz
		5.226 5.230 5.231 5.232		

162.0125-322 MHz (VHF/UHF)					Page 31
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 156.8375-174 MHz			162.0125-173.2 FIXED MOBILE	162.0125-173.2	Auxiliary Broadcasting (74) Private Land Mobile (90)
			5.226 US8 US11 US13 US216 US223 US300 US312 G5	5.226 US8 US11 US13 US216 US223 US300 US312	Private Land Mobile (90)
			173.2-173.4	173.2-173.4 FIXED Land mobile	
			173.4-174 FIXED MOBILE G5	173.4-174	
			174-216	174-216 BROADCASTING	
174-223 BROADCASTING	174-216 BROADCASTING Fixed Mobile	174-223 FIXED MOBILE BROADCASTING	216-220 Fixed Mobile Radiolocation 5.241 G2	216-220 FIXED MOBILE except aeronautical mobile	Maritime (80) Private Land Mobile (90) Personal Radio (95) Amateur (97)
	5.234		US210 US229	US210 US229 NG152 NG173	
	216-220 FIXED MARITIME MOBILE Radiolocation 5.241		220-222 FIXED LAND MOBILE Radiolocation 5.241 G2	220-222 FIXED LAND MOBILE	Private Land Mobile (90)
	5.242		US335	US335	
	220-225 AMATEUR FIXED MOBILE Radiolocation 5.241		222-225 Radiolocation 5.241 G2	222-225 AMATEUR	Amateur (97)

223-230 BROADCASTING Fixed Mobile	225-235 FIXED MOBILE	223-230 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 5.250	225-235 FIXED MOBILE	225-235	
5.243 5.246 5.247		230-235 FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250			
5.247 5.251 5.252			G27		
235-267 FIXED MOBILE			235-267 FIXED MOBILE	235-267	
5.111 5.199 5.252 5.254 5.256			5.111 5.199 5.256 G27 G100	5.111 5.199 5.256	
267-272 FIXED MOBILE Space operation (space-to-Earth)			267-322 FIXED MOBILE	267-322	
5.254 5.257					
272-273 SPACE OPERATION (space-to-Earth) FIXED MOBILE					
5.254					
273-312 FIXED MOBILE					
5.254					
312-315 FIXED MOBILE					
Mobile-satellite (Earth-to-space) 5.254 5.255					
See next page for 315-322 MHz			G27 G100		

322-410 MHz (UHF)				Page 33	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
315-322 FIXED MOBILE			See previous page for 267-322 MHz		See previous page for 267-322 MHz
5.254					
322-328.6 FIXED MOBILE RADIO ASTRONOMY			322-328.6 FIXED MOBILE	322-328.6	
5.149			5.149 G27	5.149	
328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258			328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258		
5.259					
335.4-387 FIXED MOBILE			335.4-399.9 FIXED MOBILE	335.4-399.9	
5.254					
387-390 FIXED MOBILE					
Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255					
390-399.9 FIXED MOBILE					
5.254			G27 G100		
399.9-400.05 MOBILE-SATELLITE (Earth-to-space) 5.209 A5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260			399.9-400.05 MOBILE-SATELLITE (Earth-to-space) US319 US322 RADIONAVIGATION-SATELLITE		
5.220			5.260		
400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)			400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)		
5.261 5.262			5.261		

400.15-401 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth)	400.15-401 METEOROLOGICAL AIDS (radiosonde) METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 599B US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth)	400.15-401 METEOROLOGICAL AIDS (radiosonde) MOBILE-SATELLITE (space-to-Earth) 599B US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth)	Satellite Communications (25)
5.262 5.264	647B US70	647B US70	
401-402 METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	401-402 METEOROLOGICAL AIDS (radiosonde) SPACE OPERATION (space-to-Earth) Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US70		
402-403 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	402-403 METEOROLOGICAL AIDS (radiosonde) US70 Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US345		Personal Radio (95)
403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	403-406 METEOROLOGICAL AIDS (radiosonde) US70 US345 G6	403-406 METEOROLOGICAL AIDS (radiosonde) US70 US345	
406-406.1 MOBILE-SATELLITE (Earth-to-space)	406-406.1 MOBILE-SATELLITE (Earth-to-space)		
5.266 5.267	5.266 5.267		
406.1-410 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	406.1-410 FIXED MOBILE RADIO ASTRONOMY US74	406.1-410 RADIO ASTRONOMY US74	
5.149	US13 US117 G5 G6	US13 US117	

410-470 MHz (UHF)					Page 35	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
410-420 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268			410-420 FIXED MOBILE	410-420		
420-430 FIXED MOBILE except aeronautical mobile Radiolocation			US13 G5	US13		
5.269 5.270 5.271			420-450 RADIOLOCATION G2	420-450 Amateur	Private Land Mobile (90) Amateur (97)	
430-440 AMATEUR RADIOLOCATION	430-440 RADIOLOCATION Amateur					
5.138 5.271 5.272 5.273 5.274 5.275 5.276 5.277 5.280 5.281 5.282 5.283		5.271 5.276 5.277 5.278 5.279 5.281 5.282				
440-450 FIXED MOBILE except aeronautical mobile Radiolocation			5.286 US7 US87 US217 US228 US230 G8	5.282 5.286 US7 US87 US217 US228 US230 NG135		
5.269 5.270 5.271 5.284 5.285 5.286			450-454	450-454 LAND MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)	
450-455 FIXED MOBILE			5.286 US87	5.286 US87 NG112 NG124		
			454-456	454-455 FIXED LAND MOBILE	Public Mobile (22) Maritime (80)	
5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E				NG12 NG112 NG148		
455-456 FIXED MOBILE	455-456 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C	455-456 FIXED MOBILE		455-456 LAND MOBILE	Auxiliary Broadcasting (74)	
5.209 5.271 5.286A 5.286B 5.286C 5.286E	5.209	5.209 5.271 5.286A 5.286B 5.286C 5.286E				

456-459 FIXED MOBILE	456-460		456-460 FIXED LAND MOBILE	Public Mobile (22) Maritime (80) Private Land Mobile (90)
5.271 5.287 5.288				
459-460 FIXED MOBILE	459-460 FIXED MOBILE	459-460 FIXED MOBILE		
5.209 5.271 5.286A 5.286B 5.286C 5.286E	MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C	5.209 5.271 5.286A 5.286B 5.286C 5.286E	5.288 669 NG112 NG124 NG148	
460-470 FIXED MOBILE	Meteorological-satellite (space-to-Earth)		460-462 5375 FIXED LAND MOBILE	Private Land Mobile (90)
Meteorological-satellite (space-to-Earth)			5.289 US201 US209 NG124 462 5375-462 7375 LAND MOBILE	Personal Radio (95)
			5.289 US201	
			462 7375-467 5375 FIXED LAND MOBILE	Private Land Mobile (90)
			5.289 669 US201 US209 US216 NG124	
			467 5375-467 7375 LAND MOBILE	Personal Radio (95)
			5.289 669 US201	
			467 7375-470 FIXED LAND MOBILE	Private Land Mobile (90)
5.287 5.288 5.289 5.290	5.288 5.289 669 US201 US209 US216		5.288 5.289 US201 US216 NG124	

470-849 MHz (UHF)						Page 37
International Table			United States Table			
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	FCC Rule Part(s)	
470-790 BROADCASTING	470-512 BROADCASTING Fixed Mobile	470-585 FIXED MOBILE BROADCASTING	470-608	470-512 BROADCASTING NG128 NG149 FIXED NG127 LAND MOBILE NG66 NG114	Public Mobile (22) Broadcast Radio (TV) (73) Auxiliary Broadcasting (74) Private Land Mobile (90)	
	5 292 5 293			512-608 BROADCASTING NG128 NG149	Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)	
	512-608 BROADCASTING	5 291 5 298 585-610 FIXED MOBILE BROADCASTING RADIONAVIGATION	608-614 RADIO ASTRONOMY US74 LAND MOBILE US350 US246 614-890		Personal (95)	
	5 297	5 149 5 305 5 306 5 307 610-890 FIXED MOBILE 5 317A BROADCASTING				
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)					
	614-806 BROADCASTING Fixed Mobile				Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)	
				614-698 BROADCASTING NG128 NG149	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)	
			698-746 BROADCASTING NG128 FIXED MOBILE NG159	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)		
			746-764 BROADCASTING NG128 FIXED MOBILE NG159	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcasting (74) Private Land Mobile (90)		

5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 5.311 5.312	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	764-776 FIXED MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)
				NG128 NG158 NG159	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	776-794 BROADCASTING NG128 FIXED MOBILE	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcast. (74) Private Land Mobile (90)
				NG159	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	794-806 FIXED MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)
				NG128 NG158 NG159	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	806-821 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
				NG30 NG31 NG43 NG63	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	821-824 LAND MOBILE	Private Land Mobile (90)
				NG30 NG43 NG63	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	824-849 FIXED LAND MOBILE	Public Mobile (22)
				NG30 NG43 NG63 NG151	
5.312 5.314 5.315 5.316 5.319 5.321 See next page for 862-890 MHz	790-862 FIXED BROADCASTING	5.293 5.309 5.311 806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311 5.320	See next page for 849-894 MHz	See next page for 866-896 MHz

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Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous pages for 470-862 MHz	See previous pages for 614-890 MHz	See previous pages for 585-890 MHz	See previous pages for 614-890 MHz	See previous pages for 614-849 MHz	See previous pages for 614-849 MHz
862-890 FIXED MOBILE except aeronautical Mobile 5.317A BROADCASTING 5.322 5.319 5.323				849-851 AERONAUTICAL MOBILE	Public Mobile (22)
				NG30 NG63	
				851-866 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
				NG30 NG31 NG63	
				866-869 LAND MOBILE	Private Land Mobile (90)
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	890-902 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	NG30 NG63		
			869-894 FIXED LAND MOBILE	Public Mobile (22)	
			US116 US268 NG30 NG63 NG151		
			894-896 AERONAUTICAL MOBILE		
			US116 US268		
5.318 5.325			896-901 FIXED LAND MOBILE	Private Land Mobile (90)	
			US116 US268		
			901-902 FIXED MOBILE	Personal Communications (24)	
			US116 US268 G2		

902-928 FIXED Amateur Mobile except aeronautical mobile 5.325A Radiolocation	902-928 RADIOLOCATION G59	902-928	ISM Equipment (18) Private Land Mobile (90) Amateur (97)
5.150 5.325 5.326	5.150 US215 US218 US267 US275 G11	5.150 US215 US218 US267 US275	
928-942 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation	928-932	928-929 FIXED US116 US215 US268 NG120 929-930 FIXED LAND MOBILE US116 US215 US268 930-931 FIXED MOBILE US116 US215 US268 931-932 FIXED LAND MOBILE US116 US215 US268 932-935 FIXED US215 US268 G2 935-940 US116 US215 US268 G2 940-941 US116 US268 G2	Public Mobile (22) Private Land Mobile (90) Fixed Microwave (101) Private Land Mobile (90) Personal Communications (24) Public Mobile (22) Public Mobile (22) Fixed Microwave (101) Private Land Mobile (90) Personal Communications (24)
5.323	5.325	5.327	See next page for 941-944 MHz

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International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 890-942 MHz					
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322	942-960 FIXED MOBILE 5.317A	942-960 FIXED MOBILE 5.317A BROADCASTING	941-944 FIXED	941-944 FIXED	Public Mobile (22) Fixed Microwave (101)
5.323		5.320	US268 US301 US302 G2	US268 US301 US302 NG120	
960-1215 AERONAUTICAL RADIONAVIGATION 5.328			944-960	944-960 FIXED	Public Mobile (22) Auxiliary Broadcast (74) Fixed Microwave (101)
5.328A			960-1215 AERONAUTICAL RADIONAVIGATION	NG120	Aviation (87)
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active)			5.328 US224		
5.330 5.331 5.332			1215-1240 RADIOLOCATION 5.333 G56 RADIONAVIGATION-SATELLITE (space-to-Earth)	1215-1240	
1240-1260 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur			1240-1300 RADIOLOCATION 5.333 G56	1240-1300 Amateur	Amateur (97)
5.330 5.331 5.332 5.334 5.335				5.333	
1260-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur					
5.282 5.330 5.331 5.334 5.335 5.335A			5.334	5.282 5.333 5.334	
1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space)			1300-1350 AERONAUTICAL RADIO-NAVIGATION 5.337 Radiolocation G2	1300-1350 AERONAUTICAL RADIO-NAVIGATION 5.337	Aviation (87)
5.149 5.337A			5.149	5.149	

1350-1400 FIXED MOBILE RADIOLOCATION	1350-1400 RADIOLOCATION	1350-1390 FIXED MOBILE RADIOLOCATION G2 5.149 5.334 5.339 US311 G27 G114 1390-1395	1350-1390 5.149 5.334 5.339 US311 1390-1392 FIXED MOBILE except aeronautical mobile FIXED-SATELLITE (Earth-to-space) US368 5.149 5.339 US311 US351 1392-1395 FIXED MOBILE except aeronautical mobile 5.149 5.339 US311 US351	Wireless Communications (27)
5.149 5.338 5.339 1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	5.149 5.334 5.339	5.149 5.339 US311 US351 1395-1400 LAND MOBILE US350 5.149 U5.339 US311 US351 1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246 1427-1429.5 LAND MOBILE US350	5.149 5.339 US311 US351 1395-1400 LAND MOBILE US350 5.149 U5.339 US311 US351 1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246 1427-1429.5 LAND MOBILE US350	Personal (95)
5.340 5.341 1427-1429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile		5.341 US352 See next page for 1429.5-1432 MHz	5.341 US352 1429.5-1430 FIXED (telemetry) LAND MOBILE (telemetry) 5.341 US350 US352	Private Land Mobile (90) Personal (95)
5.341 See next page for 1429-1452 MHz				

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International Table			United States Table			
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	FCC Rule Part(s)	
1429-1452 FIXED MOBILE except aeronautical Mobile	1429-1452 FIXED MOBILE 5.343		1429.5-1432	See previous page 1430-1432 FIXED (telemetry) LAND MOBILE (telemetry) FIXED-SATELLITE (space-to-Earth) US368	See previous page Private Land Mobile (90) Personal (95)	
5.341 5.342 1452-1492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 5.347 BROADCASTING- SATELLITE 5.345 5.347	5.341 1452-1492 FIXED MOBILE 5.343 BROADCASTING 5.345 5.347 BROADCASTING-SATELLITE 5.345 5.347		5.341 US352 1432-1435	5.341 US350 US352 1432-1435 FIXED MOBILE except aeronautical mobile	Wireless Communications (27)	
5.341 5.342 1492-1525 FIXED MOBILE except aeronautical mobile	5.341 5.344 1492-1525 FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348A	1492-1525 FIXED MOBILE	5.341 US361 1435-1525 MOBILE (aeronautical telemetry)	5.341 US361	Aviation (87)	
5.341 5.342 1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349	5.341 5.344 5.348 1525-1530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Fixed Mobile 5.343	5.341 5.348A 1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile 5.349	5.341 US78 1525-1530 MOBILE-SATELLITE (space-to-Earth) Mobile (aeronautical telemetry)		Satellite Communications (25) Aviation (87)	
5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.354	5.341 5.351 5.352A 5.354	5.341 5.351 US78			

1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space- to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343	1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343	1530-1535 MOBILE-SATELLITE (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Mobile (aeronautical telemetry)	Satellite Communications (25) Maritime (80)
5.341 5.342 5.351 5.354	5.341 5.351 5.354	5.341 5.351 US78 US315	
1535-1559 MOBILE-SATELLITE (space-to-Earth) 5.351A	1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343	1535-1544 MOBILE-SATELLITE (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) 5.341 5.351 US315	Aviation (87)
		1544-1545 MOBILE-SATELLITE (space-to-Earth) 5.341 5.356	
		1545-1549.5 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) Mobile-satellite (space-to-Earth)	Aviation (87)
		5.341 5.351 US308 US309	
		1549.5-1558.5 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	Aviation (87)
		5.341 5.351 US308 US309	
		1558.5-1559 AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth)	Aviation (87)
		5.341 5.351 US308 US309	
		1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)	Aviation (87)
		5.341 5.351 US208 US260	
5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A		Aviation (87)
1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A	1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A		
5.341 5.362B 5.362C 5.363	5.341 5.362B 5.362C 5.363		Aviation (87)

Note: The NTIA Manual (footnote G126) states that differential GPS stations may be authorized in the 1559-1610 MHz band, but the FCC has not yet addressed this footnote.

1610-1670 MHz (UHF)					United States Table		FCC Rule Part(s)
International Table			Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3	1610-1610.6		1610-1610.6	1610-1610.6	Satellite Communications (25) Aviation (87)
MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)		MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space)		
5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	5.341 5.364 5.366 5.367 5.368 5.370 5.372	5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372		5.341 5.364 5.366 5.367 5.368 5.372 US208		
MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)		MOBILE-SATELLITE (Earth-to-space) US319 RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space)		
5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372		5.149 5.341 5.364 5.366 5.367 5.368 5.372 US208		
MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth)	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) Mobile-satellite (space-to- Earth)	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to- Earth) Radiodetermination- satellite (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to- Earth) Radiodetermination- satellite (Earth-to-space)		MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth)		
5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372		5.341 5.364 5.365 5.366 5.367 5.368 5.372 US208		

1626.5-1660 MOBILE-SATELLITE (Earth-to-space) 5.351A	1626.5-1645.5 MOBILE-SATELLITE (Earth-to-space) MARITIME MOBILE-SATELLITE (Earth-to-space)	Satellite Communications (25) Maritime (80)
	5.341 5.351 US315 1645.5-1646.5 MOBILE-SATELLITE (Earth-to-space) 5.341 5.375	
5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376 1660-1660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A 1660.5-1668.4 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A 1668.4-1670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.341	1646.5-1651 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) Mobile-satellite (Earth-to-space) 5.341 5.351 US308 US309 1651-1660 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 5.341 5.351 US308 US309 1660-1660.5 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) RADIO ASTRONOMY 5.149 5.341 5.351 US308 US309 1660.5-1668.4 RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246 1668.4-1670 METEOROLOGICAL AIDS (radiosonde) RADIO ASTRONOMY US74 5.149 5.341 US99	Aviation (87)

1670-2110 MHz (UHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3		1670-1675	1670-1675 FIXED MOBILE except aeronautical mobile	Wireless Communications (27)
1670-1675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380						
5.341				5.341 US211 US362	5.341 US211 US362	
1675-1690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile	1675-1690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space)	1675-1690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile		1675-1700 METEOROLOGICAL AIDS (radiosonde) METEOROLOGICAL-SATELLITE (space-to-Earth)		
5.341	5.341 5.377	5.341				
1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SAT- ELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile	1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE-SATELLITE (Earth-to-space)	1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SAT- ELLITE (space-to-Earth)				
5.289 5.341 5.382	5.289 5.341 5.377 5.381	5.289 5.341 5.381		5.289 5.341 US211		
1700-1710 FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile	1700-1710 FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space)	1700-1710 FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile		1700-1710 FIXED G118 METEOROLOGICAL-SAT- ELLITE (space-to-Earth)	1700-1710 METEOROLOGICAL-SAT- ELLITE (space-to-Earth) Fixed	
5.289 5.341	5.289 5.341 5.377	5.289 5.341 5.384		5.289 5.341	5.289 5.341	
1710-1930 FIXED MOBILE 5.380 5.384A 5.388A				1710-1755 FIXED MOBILE	1710-1755	
				5.341 US256	5.341 US256	

5.149 5.341 5.385 5.386 5.387 5.388	1755-1850 FIXED MOBILE	1755-1850	
1930-1970 FIXED MOBILE 5.388A	1850-2025 G42	1850-1990 FIXED MOBILE	RF Devices (15) Personal Communications (24) Fixed Microwave (101)
5.388	1930-1970 FIXED MOBILE 5.388A Mobile-satellite (Earth-to-space)		
5.388	5.388		
1970-1980 FIXED MOBILE 5.388A			
5.388			
1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A		1990-2025 MOBILE-SATELLITE (Earth-to-space)	Satellite Communications (25)
5.388 5.389A 5.389B 5.389F			
2010-2025 FIXED MOBILE 5.388A	2010-2025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)		
5.388	5.388 5.389C 5.389D 5.389E 5.390	NG156	
2025-2110 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)	2025-2110 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)	2025-2110 FIXED NG23 NG118 MOBILE 5.391	TV Auxiliary Broadcasting (74F) Cable TV Relay (78) Local TV Transmission (101J)
5.392	5.391 5.392 US90 US222 US346 US347	5.392 US90 US222 US346 US347	

2110-2345 MHz (UHF)					Page 49
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
2110-2120 FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space)			2110-2120	2110-2150 FIXED NG23 MOBILE	Public Mobile (22) Fixed Microwave (101)
5.388			US252		
2120-2160 FIXED MOBILE 5.388A	2120-2160 FIXED MOBILE 5.388A Mobile-satellite (space-to-Earth)	2120-2160 FIXED MOBILE 5.388A	2120-2200	US252 NG153	
5.388	5.388	5.388		2150-2160 FIXED NG23	Domestic Public Fixed (21) Fixed Microwave (101)
2160-2170 FIXED MOBILE 5.388A	2160-2170 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)	2160-2170 FIXED MOBILE 5.388A		2160-2165 FIXED NG23 MOBILE	Domestic Public Fixed (21) Public Mobile (22) Fixed Microwave (101)
5.388 5.392A	5.388 5.389C 5.389D 5.389E 5.390	5.388		NG153	
2170-2200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A				2165-2200 MOBILE-SATELLITE (space-to-Earth)	Satellite Communications (25)
5.388 5.389A 5.389F 5.392A				NG23 NG168	
2200-2290 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)			2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION- SATELLITE (space-to- Earth) (space-to-space) FIXED (line-of-sight only)	2200-2290	

5.392	MOBILE (line-of-sight only including aeronautical telemetry, but excluding flight testing of manned aircraft) SPACE RESEARCH (space-to-Earth) (space-to-space)	US303	
2290-2300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	2290-2300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	2290-2300 SPACE RESEARCH (deep space) (space-to-Earth)	
2300-2450 FIXED MOBILE Amateur Radiolocation	2300-2450 FIXED MOBILE RADIOLOCATION Amateur	2300-2305 Amateur	Amateur (97) Note: 2300-2305 MHz became non-Federal Government exclusive spectrum in August 1995
5.150 5.282 5.395	5.150 5.282 5.393 5.394 5.396	5.396 US327 US328 See next page	Wireless Communications (27) Amateur (97)
		US338 G123 2310-2360 Fixed Mobile US339 Radiolocation G2 G120	2305-2310 FIXED MOBILE except aeronautical mobile RADIOLOCATION Amateur
		US338 2310-2320 FIXED MOBILE US339 RADIOLOCATION BROADCASTING- SATELLITE US327	US338 2310-2320 FIXED MOBILE US339 RADIOLOCATION BROADCASTING- SATELLITE US327
		5.396 US338 2320-2345 BROADCASTING- SATELLITE US327 Mobile US276 US328	5.396 US338 2320-2345 BROADCASTING- SATELLITE US327 Mobile US276 US328
		5.396	Satellite Communications (25)
		5.396 US327 US328 See next page	See next page for 2345-2450 MHz

2345-2655 MHz (UHF)				Page 51
International Table		United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	
See previous page for 2300-2450 MHz				Non-Federal Government
See previous page for 2300-2450 MHz	See previous page for 2300-2450 MHz	See previous page for 2300-2450 MHz	See previous page for 2300-2450 MHz	2345-2360 FIXED MOBILE US339 RADIOLOCATION BROADCASTING- SATELLITE US327
				5.396
				2360-2385 MOBILE US276 RADIOLOCATION G2 Fixed
				G120
				2385-2390
				US363
				2390-2400 G122
				2400-2402
				5.150 G123
				2402-2417
				5.150 G122
				2417-2450 Radiolocation G2
				5.150 G124
				2450-2483.5 FIXED MOBILE RADIOLOCATION
				5.150 5.394
				2450-2483.5 FIXED MOBILE RADIOLOCATION
5.150 5.397				
2450-2483.5 FIXED MOBILE RADIOLOCATION				
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2450-2483.5 FIXED MOBILE RADIOLOCATION				
5.150 5.39				

2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION- SATELLITE (space-to- Earth) 5.398	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) 5.398	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 RADIODETERMINATION- SATELLITE (space-to- Earth) 5.398	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 RADIODETERMINATION- SATELLITE (space-to- Earth) 5.398	ISM Equipment (18) Satellite Communications (25) Private Land Mobile (90) Fixed Microwave (101)
5.150 5.371 5.397 5.398 5.399 5.400 5.402	5.150 5.402	5.150 5.402	5.150 5.402 US41	5.150 5.402 US41 NG147	
2500-2520 FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space- to-Earth) 5.351A 5.403	2500-2520 FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403		2500-2655	2500-2655 FIXED 5.409 5.411 US205 FIXED-SATELLITE (space-to-Earth) NG102 MOBILE except aeronautical mobile BROADCASTING- SATELLITE NG101	Domestic Public Fixed (21) Auxiliary Broadcasting (74)
5.405 5.407 5.412 5.414	5.404 5.407 5.414 5.415A				
2520-2655 FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416	2520-2535 FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416	2520-2535 FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416			
		5.403 5.415A			
		2535-2655 FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416			
5.339 5.403 5.405 5.412 5.418 5.418B 5.418C	5.339 5.403 5.418B 5.418C	5.339 5.418 5.418A 5.418B 5.418C	5.339 US205 US269	5.339 US269	

2655-3700 MHz (UHF/SHF)					Page 53	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
2655-2670 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2670 FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2670 FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2690 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2690 FIXED US205 FIXED-SATELLITE (Earth-to-space) NG102 MOBILE except aeronautical mobile BROADCASTING- SATELLITE NG101 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	Domestic Public Fixed (21) Auxiliary Broadcasting (74)	
5.149 5.412 5.420	5.149 5.420	5.149 5.420				
2670-2690 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A (passive) Radio astronomy Space research (passive)	2670-2690 FIXED 5.409 5.411 FIXED-SATELLITE (Earth- to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A (passive) Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2670-2690 FIXED 5.409 5.411 FIXED-SATELLITE (Earth- to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A (passive) Earth exploration-satellite (passive) Radio astronomy Space research (passive)	US205 US269	US269 NG47		
5.149 5.412 5.419 5.420	5.149 5.419 5.420	5.149 5.419 5.420 5.420A				
2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)			
5.340 5.421 5.422			US246			
2700-2900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation			2700-2900 AERONAUTICAL RADIO- NAVIGATION 5.337 METEOROLOGICAL AIDS Radiolocation G2	2700-2900		
5.423 5.424			5.423 US18 G15	5.423 US18		

2900-3100 RADIO NAVIGATION 5.426 Radiolocation	2900-3100 MARITIME RADIO NAVIGATION Radiolocation US44	2900-3100 MARITIME RADIO NAVIGATION Radiolocation US44	Maritime (80) Private Land Mobile (90)
5.425 5.427	5.427 US44 US316	5.427 US316	
3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active)	3100-3300 RADIOLOCATION 5.333 US110 G59	3100-3300 Radiolocation 5.333 US110	Private Land Mobile (90)
5.149 5.428	5.149	5.149	
3300-3400 RADIOLOCATION Amateur Fixed Mobile	3300-3400 RADIOLOCATION Amateur Fixed Mobile	3300-3500 Amateur Radiolocation US108	Private Land Mobile (90) Amateur (97)
5.149 5.429 5.430	5.149 5.430	5.149	
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation 5.433	3300-3500 Amateur Radiolocation US108	
5.149 5.429 5.430	5.149 5.430	5.149 5.282	
5.431	5.282 5.432	5.149 5.282	
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3500-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433	3500-3600 Radiolocation US110 3600-3650 FIXED-SATELLITE (space-to-Earth) US245 Radiolocation US110	Private Land Mobile (90)
5.435	5.435	3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 MOBILE except aeronautical mobile NG170	
See next page for 3700-4200 MHz	See next page for 3700-4200 MHz	US245 US348 US349 See next page for 3700-4200 MHz	See next page for 3700-4200 MHz

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Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 3600-4200 MHz	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200	3700-4200 FIXED NG41 FIXED-SATELLITE (space-to-Earth)	International Fixed (23) Satellite Communications (25) Fixed Microwave (101)
4200-4400 AERONAUTICAL RADIONAVIGATION 5.438			4200-4400 AERONAUTICAL RADIONAVIGATION		Aviation (87)
5.439 5.440			5.440 US261		
4400-4500 FIXED MOBILE			4400-4500 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE			4500-4800 FIXED MOBILE	4500-4800 FIXED-SATELLITE (space-to-Earth) 792A	
4800-4990 FIXED MOBILE 5.442 Radio astronomy			US245 4800-4940 FIXED MOBILE	US245 4800-4940	
5.149 5.339 5.443			5.149 US203 4940-4990	5.149 US203 4940-4990 FIXED MOBILE except aeronautical mobile	Private Land Mobile (90) Fixed Microwave (101)
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive)			5.149 5.339 US311 G122 4990-5000 RADIO ASTRONOMY US74 Space research (passive)	5.149 5.339 US311	
5.149			US246		
5000-5150 AERONAUTICAL RADIONAVIGATION			5000-5250 AERONAUTICAL RADIO- NAVIGATION US260	5000-5150 AERONAUTICAL RADIO- NAVIGATION US260	Satellite Communications (25) Aviation (87)
5.367 5.443A 5.443B 5.444 5.444A				5.367 5.444A US211 US344 US370	

5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A	5.446 5.447 5.447B 5.447C	5.367 US211 US307 US344 US370	5150-5250 AERONAUTICAL RADIO- NAVIGATION US260 FIXED-SATELLITE (Earth- to-space) 5.447A US344	
	5.448 5.448A	5.447C US211 US307	5.447C US211 US307	
5250-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D	5.448 5.448A	5250-5350 RADIOLOCATION 5.333 US110 G59	5250-5350 Radiolocation 5.333 US110	
	5.448 5.448A			
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation	5.448 5.448A	5350-5460 AERONAUTICAL RADIO- NAVIGATION 5.449 RADIOLOCATION G56 US48	5350-5460 AERONAUTICAL RADIO- NAVIGATION 5.449 Radiolocation US48	Aviation (87)
	5.448 5.448A			
5460-5470 RADIONAVIGATION 5.449 Radiolocation	5.448 5.448A	5460-5470 RADIONAVIGATION 5.449 Radiolocation G56 US49 US65	5460-5470 RADIONAVIGATION 5.449 Radiolocation US49 US65	
	5.448 5.448A			
5470-5650 MARITIME RADIONAVIGATION Radiolocation	5.448 5.448A	5470-5600 MARITIME RADIONAVIGATION Radiolocation G56 US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51 G56 5.452 US65	5470-5600 MARITIME RADIONAVIGATION Radiolocation US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51 5.452 US65	Maritime (80)
	5.448 5.448A			
5.450 5.451 5.452				

5650-7250 MHz (SHF)				Page 57	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
5650-5725 RADIOLOCATION Amateur Space research (deep space)			5650-5925 RADIOLOCATION G2	5650-5830 Amateur	ISM Equipment (18) Amateur (97)
5.282 5.451 5.453 5.454 5.455					
5725-5830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur	5725-5830 RADIOLOCATION Amateur				
5.150 5.451 5.453 5.455 5.456	5.150 5.453 5.455			5.150 5.282	
5830-5850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)	5830-5850 RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)			5830-5850 Amateur Amateur-satellite (space-to-Earth)	
5.150 5.451 5.453 5.455 5.456	5.150 5.453 5.455			5.150	
5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation		5850-5925 FIXED-SATELLITE (Earth-to-space) US245 MOBILE NG160 Amateur	ISM Equipment (18) Private Land Mobile (90) Amateur (97)
5.150	5.150	5.150	5.150 US245	5.150	
5925-6700 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE			5925-6425	5925-6425 FIXED NG41 FIXED-SATELLITE (Earth-to-space)	Satellite Communications (25) Fixed Microwave (101)
			6425-6525	6425-6525 FIXED-SATELLITE (Earth-to-space) MOBILE	Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)
			5.440 5.458	5.440 5.458	

5.149 5.440 5.458 6700-7075 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE	6525-6700 FIXED FIXED-SATELLITE (Earth-to-space)	6525-6700 FIXED FIXED-SATELLITE (Earth-to-space)	Satellite Communications (25) Fixed Microwave (101)
	5.149 5.458	5.149 5.458	
	6700-7125	6700-6875 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441	
		5.458 5.458A 5.458B	
		6875-7025 FIXED NG118 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE NG171	
		5.458 5.458A 5.458B	
		7025-7075 FIXED NG118 FIXED-SATELLITE (Earth-to-space) NG172 MOBILE NG171	
		5.458 5.458A 5.458B	
		7075-7125 FIXED NG118 MOBILE NG171	
	5.458	5.458	
5.458 5.458A 5.458B 5.458C 7075-7250 FIXED MOBILE	7125-7190 FIXED	7125-7190	Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)
	5.458 US252 G116	5.458 US252	
	7190-7235 FIXED SPACE RESEARCH (Earth-to-space)	7190-7250	
	5.458		
	7235-7250 FIXED		
	5.458	5.458	
5.458 5.459 5.460			

7250-8215 MHz (SHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2					
7250-7300 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE				7250-7300 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed	7250-8025	
5.461				G117		
7300-7450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile				7300-7450 FIXED FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)		
5.461				G117		
7450-7550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile				7450-7550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SAT- ELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)		
5.461A				G104 G117		
7550-7750 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile				7550-7750 FIXED FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)		
7750-7850 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile				G117		
7850-7900 FIXED MOBILE except aeronautical mobile				7750-7900 FIXED		

7900-8025 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	7900-8025 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Fixed G117		
5.461 8025-8175 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463	8025-8175 EARTH EXPLORATION- SATELLITE (space-to- Earth) FIXED FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to- space) (no airborne transmissions) US258 G117	8025-8175	
5.462A 8175-8215 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463	8175-8215 EARTH EXPLORATION- SATELLITE (space-to- Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SAT- ELLITE (Earth-to-space) Mobile-satellite (Earth-to- space) (no airborne transmissions) US258 G104 G117	8175-8215	
5.462A			

8215-10000 MHz (SHF)				Page 61	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
8215-8400 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463			8215-8400 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) (no airborne transmissions)	8215-8400	
5.462A 8400-8500 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466			US258 G117 8400-8450 FIXED SPACE RESEARCH (space-to-Earth) (deep space only)	US258 8400-88450	
5.467 8500-8550 RADIOLOCATION 5.468 5.469			8450-8500 FIXED SPACE RESEARCH (space-to-Earth)	8450-8500 SPACE RESEARCH (space-to-Earth)	
8550-8650 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)			8500-9000 RADIOLOCATION 5.333 US110 G59	8500-9000 Radiolocation 5.333 US110	
5.468 5.469 5.469A 8650-8750 RADIOLOCATION 5.468 5.469					
8750-8850 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470					
5.471					

8850-9000 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	US53	US53	
9000-9200 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.471	9000-9200 AERONAUTICAL RADIO- NAVIGATION 5.337 Radiolocation US48 US54	9000-9200 AERONAUTICAL RADIO- NAVIGATION 5.337 Radiolocation US48 US54	Aviation (87)
9200-9300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	9200-9300 MARITIME RADIO- NAVIGATION 5.472 Radiolocation US110 G59 5.474	9200-9300 MARITIME RADIO- NAVIGATION 5.472 Radiolocation US110 5.474	
9300-9500 RADIONAVIGATION 5.476 Radiolocation 5.427 5.474 5.475	9300-9500 RADIONAVIGATION 5.476 US66 Radiolocation US51 Meteorological aids 5.427 5.474 US67 US71	9300-9500 RADIONAVIGATION 5.476 US66 Radiolocation US51 Meteorological aids 5.427 5.474 US67 US71	
9500-9800 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	9500-10000 RADIOLOCATION 5.333 US110 5.477 5.478 5.479	9500-10000 RADIOLOCATION 5.333 US110 5.477 5.478 5.479	
9800-10000 RADIOLOCATION Fixed			
5.477 5.478 5.479	5.479	5.479	5.479

10-12.7 GHz (SHF)					Page 63	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
10-10.45 FIXED MOBILE RADIOLOCATION Amateur	10-10.45 RADIOLOCATION Amateur	10-10.45 FIXED MOBILE RADIOLOCATION Amateur	10-10.45 RADIOLOCATION	10-10.45 Radiolocation Amateur	Private Land Mobile (90) Amateur (97)	
5.479	5.479 5.480	5.479	5.479 US58 US108 G32	5.479 US58 US108 NG42		
10.45-10.5 RADIOLOCATION Amateur Amateur-satellite			10.45-10.5 RADIOLOCATION	10.45-10.5 Radiolocation Amateur Amateur-satellite		
5.481			US58 US108 G32	US58 US108 NG42 NG134		
10.5-10.55 FIXED MOBILE RADIOLOCATION	10.5-10.55 FIXED MOBILE RADIOLOCATION		10.5-10.55 RADIOLOCATION US59		Private Land Mobile (90)	
10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation			10.55-10.6	10.55-10.6 FIXED	Fixed Microwave (101)	
10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation			10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED SPACE RESEARCH (passive)		
1.149 5.482			US265 US277	US265 US277		
0.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246 US355			

10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A MOBILE except aeronautical mobile	10.7-11.7 FIXED NG41 FIXED-SATELLITE (space-to-Earth) 5.441 US211 NG104 US355	International Fixed (23) Satellite Communications (25) Fixed Microwave (101)
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING- SATELLITE	11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile 5.485 5.488 12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.485 5.488 5.489 12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING- SATELLITE	11.7-12.2 FIXED-SATELLITE (space-to-Earth) NG143 NG145 MOBILE except aeronautical mobile 5.486 5.488 12.2-12.7 FIXED BROADCASTING- SATELLITE	Satellite Communications (25) Fixed Microwave (101)
5.487 5.487A 5.492 12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)	5.487 5.487A 5.492 12.2-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING 5.484A 5.487 5.491 12.5-12.75 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile BROADCASTING- SATELLITE 5.493	12.2-12.7 FIXED BROADCASTING- SATELLITE 5.490 See next page for 12.7-12.75 GHz	International Fixed (23) Satellite Communications (25) Fixed Microwave (101)
5.494 5.495 5.496	See next page for 12.7-12.75 GHz	See next page for 12.7-12.75 GHz	See next page for 12.7-12.75 GHz

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 12.5-12.75 GHz	12.7-12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	See previous page for 12.5-12.75 GHz	12.7-12.75 FIXED NG118 FIXED-SATELLITE (Earth-to-space) MOBILE	12.7-12.75 FIXED NG118 FIXED-SATELLITE (Earth-to-space) MOBILE	Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)
12.75-13.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)			12.75-13.25 FIXED NG118 FIXED-SATELLITE (Earth-to-space) 5.441 NG104 MOBILE	NG53 12.75-13.25 FIXED NG118 FIXED-SATELLITE (Earth-to-space) 5.441 NG104 MOBILE	
13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499			US251 13.25-13.4 AERONAUTICAL RADIONAVIGATION 5.497 Space research (Earth-to-space)	US251 NG53	Aviation (87)
13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B			13.4-13.75 RADIOLOCATION 5.333 US110 G59 Space research Standard frequency and time signal-satellite (Earth-to-space)	13.4-13.75 Radiolocation 5.333 US110 Space research Standard frequency and time signal-satellite (Earth-to-space)	Private Land Mobile (90)
13.75-14 FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard frequency and time signal-satellite (Earth-to-space) Space research			13.75-14 RADIOLOCATION US110 G59 Standard frequency and time signal-satellite (Earth-to-space) Space research US337	13.75-14 FIXED-SATELLITE (Earth-to-space) US337 Radiolocation US110 Standard frequency and time signal-satellite (Earth-to-space) Space research	Satellite Communications (25) Private Land Mobile (90)
5.499 5.500 5.501 5.502 5.503 5.503A			5.503A US356 US357	5.503A US356 US357	

14-14.25 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research	14-14.2 RADIONAVIGATION US292 Space research	14-14.2 FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION US292 Land mobile-satellite (Earth-to-space) Space research	Satellite Communications (25) Maritime (80) Aviation (87)
5.505	14.2-14.4	14.2-14.4 FIXED-SATELLITE (Earth-to-space) Land mobile-satellite (Earth-to-space) Mobile except aeronautical mobile	Satellite Communications (25) Fixed Microwave (101)
14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research	14.2-14.4	14.2-14.4 FIXED-SATELLITE (Earth-to-space) Land mobile-satellite (Earth-to-space) Mobile except aeronautical mobile	Satellite Communications (25) Fixed Microwave (101)
5.505 5.508 5.509			
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite	
14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research (space-to-Earth)	14.4-14.47 Fixed Mobile	14.4-14.47 FIXED-SATELLITE (Earth-to-space) Land mobile-satellite (Earth-to-space)	Satellite Communications (25)
14.47-14.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radio astronomy	14.47-14.5 Fixed Mobile	14.47-14.5 FIXED-SATELLITE (Earth-to-space) Land mobile-satellite (Earth-to-space)	
5.149	5.149 US203	5.149 US203	

14.5-18.3 GHz (SHF)					Page 67	
International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
14.5-14.8 FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research			14.5-14.7145 FIXED Mobile Space research	14.5-14.7145		
14.8-15.35 FIXED MOBILE Space research			14.7145-15.1365 MOBILE Fixed Space research	14.7145-15.1365		
			US310	US310		
5.339			15.1365-15.35 FIXED Mobile Space research	15.1365-15.35		
15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			5.339 US211	5.339 US211		
5.340 5.511			15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)			
15.4-15.43 AERONAUTICAL RADIONAVIGATION			US246			
5.511D			15.4-15.43 AERONAUTICAL RADIONAVIGATION US260		Aviation (87)	
15.43-15.63 FIXED SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION			US211			
5.511C			15.43-15.63 AERONAUTICAL RADIO- NAVIGATION US260	15.4-15.43 FIXED SATELLITE (Earth-to-space) AERONAUTICAL RADIO- NAVIGATION US260	Satellite Communications (25) Aviation (87)	
15.63-15.7 AERONAUTICAL RADIONAVIGATION			5.511C US211 US359	5.511C US211 US359		
5.511D			15.63-15.7 AERONAUTICAL RADIONAVIGATION US260		Aviation (87)	
15.7-16.6 RADIOLOCATION			US211			
5.512 5.513			15.7-16.6 RADIOLOCATION US110 G59	15.7-17.2 Radiolocation US110	Private Land Mobile (90)	

16.6-17.1 RADIOLOCATION Space research (deep space) (Earth-to-space)	16.6-17.1 RADIOLOCATION US110 Space research (deep space) (Earth-to-space)				
5.512 5.513					
17.1-17.2 RADIOLOCATION	17.1-17.2 RADIOLOCATION US110 G59				
5.512 5.513					
17.2-17.3 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION	17.2-17.3 RADIOLOCATION US110 G59 Earth exploration-satellite (active) Space research (active)	17.2-17.3 Radiolocation US110 Earth exploration-satellite (active) Space research (active)			
5.512 5.513 5.513A					
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation	17.3-17.7 FIXED-SATELLITE (Earth-to-space) US271 BROADCASTING-SATELLITE NG163	Satellite Communications (25)
5.514	5.514 5.515 5.517	5.514		US259	
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) 5.516 BROADCASTING-SATELLITE Mobile 5.518	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE		17.7-17.8 FIXED FIXED-SATELLITE (Earth-to-space) US271	Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)
	5.515 5.517			NG144	
	17.8-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE			17.8-18.3 FIXED	Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)
18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.520 MOBILE				5.519 US334	
5.519 5.521				See next page for 18.3-18.6 GHz	See next page for 18.3-18.58 GHz

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International Table			United States Table				
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		FCC Rule Part(s)	
See previous page for 18.1-18.4 GHz							
18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE			18.3-18.6 FIXED-SATELLITE (space-to-Earth) G117	18.3-18.58 FIXED FIXED-SATELLITE (space- to-Earth) NG164	Satellite Communications (25) Auxiliary Broadcast (74) Cable TV Relay (78) Fixed Microwave (101)		
			US334	US334 NG144	Satellite Communications (25)		
18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive)	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive)	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive)	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE G117 SPACE RESEARCH (passive)	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) US255 NG164 SPACE RESEARCH (passive)			
5.522A 5.522C	5.222A	5.522A	US254 US334	US254 US334 NG144			
18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE			18.8-20.2 FIXED-SATELLITE (space-to-Earth) G117	18.8-19.3 FIXED-SATELLITE (space-to-Earth) NG165			
				US334 NG144			
19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-space) 5.523B 5.523C 5.523D 5.523E MOBILE				19.3-19.7 FIXED FIXED-SATELLITE (space- to-Earth) NG166	Satellite Communications (25) Auxiliary Broadcast (74) Cable TV Relay (78) Fixed Microwave (101)		
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-satellite (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-satellite (space-to-Earth)		US334 NG144			
5.524	5.524 5.525 5.526 5.527 5.528 5.529	5.524 5.525 5.526 5.527 5.528 5.529		19.7-20.1 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	5.525 5.526 5.527 5.528 5.529 US334		

20.1-20.2 FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth)		20.1-20.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	
5.524 5.525 5.526 5.527 5.528		US334	5.525 5.526 5.527 5.528 US334
20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth)		20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth)	20.2-21.2 Standard frequency and time signal-satellite (space-to-Earth)
5.524		G117	
21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)		21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	Fixed Microwave (101)
21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.530	21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.530	US263	
22-22.21 FIXED MOBILE except aeronautical mobile	21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.531	21.4-22 FIXED MOBILE	
5.149		22-22.21 FIXED MOBILE except aeronautical mobile	
22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)		22-22.21 FIXED MOBILE except aeronautical mobile	
5.149 5.532		5.149	5.149
		22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)	22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)
		5.149 US263	5.149 US263

22.5-27.5 GHz (SHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3				
22.5-22.55 FIXED MOBILE				22.5-22.55 FIXED MOBILE		Fixed Microwave (101)
22.55-23.55 FIXED INTER-SATELLITE MOBILE				22.55-23.55 FIXED INTER-SATELLITE MOBILE		Satellite Communications (25) Fixed Microwave (101)
5.149				5.149 US278		
23.55-23.6 FIXED MOBILE				23.55-23.6 FIXED MOBILE		Fixed Microwave (101)
23.6-24 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)				23.6-24 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340				US246		
24-24.05 AMATEUR AMATEUR-SATELLITE				24-24.05 AMATEUR AMATEUR-SATELLITE		ISM Equipment (18) Amateur (97)
5.150				5.150 US211		
24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active)				24.05-24.25 RADIOLOCATION US110 G59 Earth exploration-satellite (active)	24.05-24.25 Radiolocation US110 Amateur Earth exploration-satellite (active)	ISM Equipment (18) Private Land Mobile (90) Amateur (97)
5.150				5.150	5.150	
24.25-24.45 FIXED	24.25-24.45 RADIO NAVIGATION FIXED	24.25-24.45 RADIO NAVIGATION FIXED	24.25-24.45 RADIO NAVIGATION MOBILE	24.25-24.45	24.25-24.45 FIXED	Fixed Microwave (101)

24.45-24.75 FIXED INTER-SATELLITE	24.45-24.65 INTER-SATELLITE RADIONAVIGATION	24.45-24.65 FIXED INTER-SATELLITE MOBILE RADIONAVIGATION	24.45-24.65 INTER-SATELLITE RADIONAVIGATION	Satellite Communications (25)
	5.533	5.533	5.533	
24.75-25.25 FIXED	24.65-24.75 INTER-SATELLITE RADIOLOCATION-SAT- ELLITE (Earth-to-space)	24.65-24.75 FIXED INTER-SATELLITE MOBILE	24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	Satellite Communications (25) Aviation (87)
	5.533	5.533	5.533	
24.75-25.25 FIXED	24.75-25.25 FIXED-SATELLITE (Earth-to-space) 5.535	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE	24.75-25.05 RADIONAVIGATION	Satellite Communications (25) Fixed Microwave (101)
	5.534	5.534	25.05-25.25 FIXED-SATELLITE (Earth-to-space) NG167 FIXED	
25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-27 Standard frequency and time signal-satellite (Earth-to-space)	Note: In its Manual, NTIA has added a primary inter-satellite service allocation to the band 25.25-27.5 GHz, limited the use of this allocation by adopting footnote 5.536, and has changed the directional indicator for the Earth exploration-satellite service allocation in the band 25.5-27 GHz from space-to-space to space-to-Earth.
			25.25-27 Standard frequency and time signal-satellite (Earth-to-space)	
25.5-27 EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 Earth exploration-satellite (space-to-space)
			25.5-27 FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)	
27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE	27-27.5 FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE	27-27.5 FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE	27-27.5 FIXED MOBILE	27-27.5 Earth exploration-satellite (space-to-space)
			27-27.5 FIXED MOBILE	

27.5-32 GHz (SHF/EHF)				Page 73	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
27.5-28.5 FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE 5.538 5.540 5.5-29.1 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540 9.1-29.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540 9.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542 9.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 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			27.5-30 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 29.5-29.9 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) 5.525 5.526 5.527 5.529 29.9-30 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) 5.525 5.526 5.527 5.543	Satellite Communications (25) Fixed Microwave (101) Satellite Communications (25)	

30-31 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth)	30-31 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to- Earth)	30-31 Standard frequency and time signal-satellite (space- to-Earth)	
5.542	G117		
31-31.3 FIXED 5.543A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545	31-31.3 Standard frequency and time signal-satellite (space-to- Earth)	31-31.3 FIXED MOBILE Standard frequency and time signal-satellite (space- to-Earth)	Fixed Microwave (101)
5.149	5.149 US211	5.149 US211	
31.3-31.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	31.3-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340			
31.5-31.8 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile	31.5-31.8 EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile		
5.149 5.546	5.340		
31.8-32 FIXED 5.547A RADIO NAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)	31.8-32 RADIO NAVIGATION US69 SPACE RESEARCH (deep space) (space-to-Earth) US262	31.8-32 SPACE RESEARCH (deep space) (space-to-Earth) US262	
5.547 5.547B 5.548	5.548 US211	5.548 US211	

32-40 GHz (EHF)				Page 75	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
32-32.3 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)			32-32.3 INTER-SATELLITE US278 RADIONAVIGATION US69 SPACE RESEARCH (deep space) (space-to-Earth) US262	32-32.3 INTER-SATELLITE US278 SPACE RESEARCH (deep space) (space-to-Earth) US262	
5.547 5.547C 5.548			5.548	5.548	
32.3-33 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION			32.3-33 INTER-SATELLITE US278 RADIONAVIGATION US69		Aviation (87)
5.547 5.547D 5.548			5.548		
33-33.4 FIXED 5.547A RADIONAVIGATION			33-33.4 RADIONAVIGATION US69		
5.547 5.547E			US360 G117		
33.4-34.2 RADIOLOCATION			33.4-36 RADIOLOCATION US110 G34	33.4-36 Radiolocation US110	Private Land Mobile (90)
5.549					
34.2-34.7 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space)					
5.549					
34.7-35.2 RADIOLOCATION Space research 5.550					
5.549					
35.2-35.5 METEOROLOGICAL AIDS RADIOLOCATION					
5.549					
35.5-36 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)					

36-37 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	36-37 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)		
5.149	US263 US342		
37-37.5 FIXED MOBILE SPACE RESEARCH (space-to-Earth)	37-38 FIXED MOBILE SPACE RESEARCH (space-to-Earth)	37-37.6 FIXED MOBILE	
5.547			
37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth)		37.6-38.6 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	Satellite Communications (25)
5.547			
38-39.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE Earth exploration-satellite (space-to-Earth)	38-38.6 FIXED MOBILE 38.6-39.5		
5.547	US291	38.6-39.5 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE US291	Auxiliary Broadcasting (74) Fixed Microwave (101)
39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth)	39.5-40 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US291 G117	39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) US291	
5.547			

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International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)			40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	40-40.5 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	Satellite Communications (25)	
40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile Mobile-satellite (space-to-Earth)	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile	G117 40.5-42.5	40.5-41 FIXED-SATELLITE (space-to-Earth) BROADCASTING-SATELLITE Mobile Fixed		
5.547	5.547	5.547		US211		
41-42.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA BROADCASTING BROADCASTING-SATELLITE Mobile				41-42.5 FIXED BROADCASTING BROADCASTING-SATELLITE MOBILE		
5.547 5.551F 5.551G			US211	US211		
42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY			42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile RADIO ASTRONOMY	42.5-43.5 RADIO ASTRONOMY		
5.149 5.547			US342	US342		

43.5-47 MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	43.5-45.5 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) G117	43.5-45.5	
	45.5-46.9 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE 5.554		RF Devices (15)
5.554 47-47.2 AMATEUR AMATEUR-SATELLITE 47.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE	46.9-47 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION- SATELLITE 5.554 47-48.2	46.9-47 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION- SATELLITE FIXED 5.554	
		47-47.2 AMATEUR AMATEUR-SATELLITE 47.2-48.2 FIXED FIXED-SATELLITE (Earth-to-space) US297 MOBILE US264	Amateur (97)
5.149 5.340 5.552A 5.555	48.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) US297 MOBILE US264 5.555 US342		Satellite Communications (25)

50.2-65 GHz (EHF)				Page 79	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)			50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)		
5.340 5.555A			US246		
50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-satellite (Earth-to-space)			50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space)	50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space)	
51.4-52.6 FIXED MOBILE			G117 51.4-52.6 FIXED MOBILE		
5.547 5.556					
52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)			52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)		
5.340 5.556			US246		
54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)			54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)		
5.556B					
55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive)			55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive)		
5.547 5.557			US263 US353		
56.9-57 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive)			56.9-57 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE G128 MOBILE 5.558	56.9-57 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE 5.558 SPACE RESEARCH	

	SPACE RESEARCH (passive)	(passive)	
5.547 5.557	US263	US263	
57-58.2	57-58.2	EARTH EXPLORATION-SATELLITE (passive)	RF Devices (15)
EARTH EXPLORATION-SATELLITE (passive)	FIXED		
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
MOBILE 5.558	MOBILE 5.558		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.557	US263		
58.2-59	58.2-59	EARTH EXPLORATION-SATELLITE (passive)	
EARTH EXPLORATION-SATELLITE (passive)	FIXED		
MOBILE	MOBILE		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.547 5.556	US353 US354		
59-59.3	59-59.3	EARTH EXPLORATION-SATELLITE (passive)	
EARTH EXPLORATION-SATELLITE (passive)	FIXED		
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A		
MOBILE 5.558	MOBILE 5.558		
RADIOLOCATION 5.559	RADIOLOCATION 5.559		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
59.3-64	59.3-64	EARTH EXPLORATION-SATELLITE (passive)	
FIXED	FIXED		
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		
RADIOLOCATION 5.559	RADIOLOCATION 5.559		
5.138	5.138 US353		
64-65	64-65		
FIXED	FIXED		
INTER-SATELLITE	INTER-SATELLITE		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.547 5.556			

65-92 GHz (EHF)				Page 81	
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
65-66 EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547			65-66 EARTH EXPLORATION- SATELLITE FIXED MOBILE except aeronautical mobile SPACE RESEARCH	65-66 EARTH EXPLORATION- SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH	
66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554			66-71 MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION SATELLITE 5.554	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION- SATELLITE	
71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)			71-74 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) US270		
74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.559A 5.561			74-75.5 FIXED FIXED-SATELLITE (Earth-to-space) US297 MOBILE 75.5-76		
76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149			76-81 RADIOLOCATION 76-77 RADIOLOCATION Amateur 77-77.5 RADIOLOCATION Amateur Amateur-satellite	75.5-76 AMATEUR AMATEUR-SATELLITE 76-77 RADIOLOCATION Amateur 77-77.5 RADIOLOCATION Amateur Amateur-satellite	Amateur (97) RF Devices (15) Amateur (97)

77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149		77.5-78 RADIOLOCATION AMATEUR AMATEUR-SATELLITE	
78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560		78-81 RADIOLOCATION Amateur Amateur-satellite 5.560	
79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149			
81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	81-84 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		
84-86 FIXED FIXED SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	84-86 FIXED MOBILE US211 US377	84-86 FIXED MOBILE BROADCASTING- SATELLITE US211 US377	
86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246		

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International Table			United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government		
92-94 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION			92-95 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIOLOCATION			
5.149						
94-94.1 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy						
5.562 5.562A						
94.1-95 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION						
5.149						
95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE			US342 95-100 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation			
5.149 5.554						
100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			5.149 5.554 100-102 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)			
5.340 5.341						
102-105 FIXED MOBILE RADIO ASTRONOMY			5.341 US246 102-105 FIXED FIXED-SATELLITE (space-to-Earth)			
5.149 5.341						
			5.341 US211			

105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B	105-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	
5.149 5.341		
109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340 5.341		
111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B		
5.149 5.341		
114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340 5.341	5.341 US246	
116-119.98 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive)	116-119.98 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive)	
5.341	5.341 US211 US263	

119.98-164 GHz (EHF)				Page 85	
International Table		United States Table		FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
119.98-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.362C SPACE RESEARCH (passive)			119.98-120.02 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive) Amateur		
5.138 5.341			5.341 US211 US263		
122.25-123 FIXED INTER-SATELLITE MOBILE 5.558 Amateur			120.02-126 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive)		ISM Equipment (18)
5.138					
123-130 FIXED SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D					
5.149 5.554					
130-134 EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY			5.138 US211 US263 126-134 FIXED INTER-SATELLITE MOBILE US373 RADIOLOCATION US374		
5.149 5.562A					
134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy					
136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite			134-142 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation		
5.149					

FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	142-144	142-144 AMATEUR AMATEUR-SATELLITE	Amateur (97)
	144-149 RADIOLOCATION	144-149 RADIOLOCATION Amateur Amateur-satellite	
	5.149 US372	5.149 US372	
	149-150 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE		
5.340 151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562G 158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	150-151 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive)		
	US263 US342 US369		
	151-164 FIXED FIXED-SATELLITE (space-to-Earth)		
	US211		

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			164-168 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558			US246 168-170 FIXED MOBILE 170-174.5 FIXED INTER-SATELLITE MOBILE 5.558 US342 US369		
5.149 5.562D 174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558			174.5-174.8 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE 5.558 SPACE RESEARCH (passive) US263 US342 US369		
174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)			174.8-176.5 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive) US263 US342 US369 176.5-182 FIXED INTER-SATELLITE MOBILE US373 US211 US342 US369		
182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563			182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) US246		

185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190 FIXED INTER-SATELLITE MOBILE US373 US211 US342 US369	
190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	190-191.8 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE US371	
5.340 191.8-200 FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	191.8-200 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.341 5.554	
200-202 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	200-202 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.341 US263	
5.340 5.341 5.563A 202-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	202-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	
5.340 5.341 5.563A 209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	5.341	

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B			217-231 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.149 5.341			5.341 US246		
226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			231-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
5.340					
231.5-232 FIXED MOBILE Radiolocation					
232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation					
235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)			US211 235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (passive)		
5.563A 5.563B			US263		
238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIO NAVIGATION RADIO NAVIGATION-SATELLITE			238-241 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
240-241 FIXED MOBILE RADIOLOCATION					

241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	241-248 RADIOLOCATION Amateur Amateur-satellite	241-248 RADIOLOCATION Amateur Amateur-satellite	ISM Equipment (18) Amateur (97)
5.138 5.149	5.138	5.138	
248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy	248-250 AMATEUR AMATEUR-SATELLITE	248-250 AMATEUR AMATEUR-SATELLITE	Amateur (97)
5.149			
250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	250-252 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	250-252 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	
5.340 5.563A	US342 US372	US342 US372	
252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE	252-265 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	252-265 MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	
5.149 5.554	5.554 US211 US342 US369 US372	5.554 US211 US342 US369 US372	
265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	
5.149 5.563A	US342	US342	
275-1000 (Not allocated) 5.565	275-300 FIXED MOBILE	275-300 FIXED MOBILE	
	US375	US375	
	300-1000 (Not allocated) US375	300-1000 (Not allocated) US375	Amateur (97)

Note: The International Telecommunication Union has re-numbered international footnotes using a new numbering scheme and has substantively revised the text of certain of these international footnotes. These international footnotes shall be listed immediately below this note in I. Until such time as the Commission has considered the substantively revised international footnotes that have previously been adopted domestically, certain of the old international footnotes shall apply in the United States. These footnotes appear immediately after footnote 5.565 in II.

I. New Numbering Scheme

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

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

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

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

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, Georgia, Kazakstan, Kyrgyzstan, the Russian Federation, Tajikistan and Turkmenistan, the band 67–70 kHz is also allocated to the radionavigation service on a primary basis.

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).

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.

5.61 In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70–90 kHz and 110–130 kHz shall be subject to agreement obtained under No. 9.21 with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.

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).

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

5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 130–148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

5.68 *Alternative allocation:* in Angola, Botswana, Burundi, the Congo,

Malawi, Dem. Rep. of the Congo, Rwanda and South Africa, the band 160–200 kHz is allocated to the fixed service on a primary basis.

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

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

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

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

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

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

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

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 Territories of Region 3, India, Indonesia (until 1 January 2005), Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415–495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435–495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. 52.39).

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

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

5.82 In the maritime mobile service, the frequency 490 kHz is, from the date of full implementation of the GMDSS (see Resolution 331 (Rev.WRC-97)), 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.

5.83 The frequency 500 kHz is an international distress and calling frequency for Morse radiotelegraphy. The conditions for its use are prescribed in Articles 31 and 52, and in Appendix 13.

5.84 The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles 31 and 52 and in Appendix 13.

5.86 In Region 2, in the band 525–535 kHz the carrier power of broadcasting stations shall not exceed 1 kW during the day and 250 W at night.

5.87 *Additional allocation:* in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 526.5–535 kHz is also allocated to the mobile service on a secondary basis.

5.87A *Additional allocation:* in Uzbekistan, the band 526.5–1606.5 kHz is also allocated to the radionavigation service on a primary basis. Such use is subject to agreement obtained under No. 9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime.

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

5.89 In Region 2, the use of the band 1605–1705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

The examination of frequency assignments to stations of the fixed and mobile services in the band 1625–1705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

5.90 In the band 1605–1705 kHz, in cases where a broadcasting station of Region 2 is concerned, the service area of the maritime mobile stations in Region 1 shall be limited to that provided by ground-wave propagation.

5.91 *Additional allocation:* in the Philippines and Sri Lanka, the band 1606.5–1705 kHz is also allocated to the broadcasting service on a secondary basis.

5.92 Some countries of Region 1 use radiodetermination systems in the bands 1606.5–1625 kHz, 1635–1800 kHz, 1850–2160 kHz, 2194–2300 kHz, 2502–2850 kHz and 3500–3800 kHz, subject to agreement obtained under No. 9.21. The radiated mean power of these stations shall not exceed 50 W.

5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1625–1635 kHz, 1800–1810 kHz and 2160–2170 kHz and, in Bulgaria, the bands 1625–1635 kHz and 1800–1810 kHz, are also allocated to the fixed and land mobile services on a primary basis,

subject to agreement obtained under No. 9.21.

5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, the Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1715–1800 kHz and 1850–2000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

5.97 In Region 3, the Loran system operates either on 1850 kHz or 1950 kHz, the bands occupied being 1825–1875 kHz and 1925–1975 kHz respectively. Other services to which the band 1800–2000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1850 kHz or 1950 kHz.

5.98 *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1810–1830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.99 *Additional allocation:* in Saudi Arabia, Austria, Bosnia and Herzegovina, Iraq, Libya, Uzbekistan, Slovakia, the Czech Rep., Romania, Slovenia, Chad, Togo and Yugoslavia, the band 1810–1830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.100 In Region 1, the authorization to use the band 1810–1830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. 5.98 and 5.99 to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. 5.98 and 5.99.

5.101 *Alternative allocation:* in Burundi and Lesotho, the band 1810–1850 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.102 *Alternative allocation:* in Argentina, Bolivia, Chile, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 1850–2000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis.

5.103 In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1850–2045 kHz, 2194–2498 kHz, 2502–2625 kHz and 2650–2850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.

5.104 In Region 1, the use of the band 2025–2045 kHz by the meteorological aids service is limited to oceanographic buoy stations.

5.105 In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2065–2107 kHz shall be limited to class J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2065.0 kHz, 2079.0 kHz, 2082.5 kHz, 2086.0 kHz, 2093.0 kHz, 2096.5 kHz, 2100.0 kHz and 2103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2068.5 kHz and 2075.5 kHz are also used for this purpose, while the frequencies within the band 2072–2075.5 kHz are used as provided in No. 52.165.

5.106 In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2065 kHz and 2107 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.

5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia and Swaziland, the band 2160–2170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W.

5.108 The carrier frequency 2182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2173.5–2190.5 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

5.109 The frequencies 2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 kHz, 12577 kHz and 16804.5 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 2174.5 kHz, 4177.5 kHz, 6268 kHz, 8376.5 kHz, 12520 kHz and 16695 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 2182 kHz, 3023 kHz, 5680 kHz, 8364 kHz and the frequencies 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article 31 and in Appendix 13.

The same applies to the frequencies 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

5.112 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, Greece, Iceland, Malta, Sri Lanka and Yugoslavia, the band 2194–2300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.113 For the conditions for the use of the bands 2300–2495 kHz (2498 kHz in Region 1), 3200–3400 kHz, 4750–4995 kHz and 5005–5060 kHz by the broadcasting service, see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10.

5.114 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, Greece, Iraq, Malta, and Yugoslavia, the band 2502–2625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.115 The carrier (reference) frequencies 3023 kHz and 5680 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.

5.116 Administrations are urged to authorize the use of the band 3155–3195 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 3155 kHz and 3400 kHz to suit local needs.

It should be noted that frequencies in the range 3000 kHz to 4000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

5.117 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Côte d'Ivoire, Denmark, Egypt, Greece, Iceland, Liberia, Malta, Sri Lanka, Togo and Yugoslavia, the band 3155–3200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.118 *Additional allocation:* in the United States, Japan, Mexico, Peru and Uruguay, the band 3230–3400 kHz is also allocated to the radiolocation service on a secondary basis.

5.119 *Additional allocation:* in Honduras, Mexico, Peru and Venezuela, the band 3500–3750 kHz is also allocated to the fixed and mobile services on a primary basis.

5.120 For the use of the bands allocated to the amateur service at 3.5 MHz, 7.0 MHz, 10.1 MHz, 14.0 MHz, 18.068 MHz, 21.0 MHz, 24.89 MHz and 144 MHz in the event of natural disasters, see Resolution 640.¹(SUP-WRC-2000)

5.122 *Alternative allocation:* in Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3750–4000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.123 *Additional allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 3900–3950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21.

5.125 *Additional allocation:* in Greenland, the band 3950–4000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

5.126 In Region 3, the stations of those services to which the band 3995–4005 kHz is allocated may transmit standard frequency and time signals.

5.127 The use of the band 4000–4063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. 52.220 and Appendix 17).

5.128 In Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, Georgia, India, Kazakhstan, Mali, Niger, Kyrgyzstan, Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4063–4123 kHz, 4130–4133 kHz and 4408–4438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast

¹ This Resolution was abrogated by WRC-97.

may operate on condition that harmful interference is not caused to the maritime mobile service.

5.129 On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4063–4123 kHz and 4130–4438 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.

5.130 The conditions for the use of the carrier frequencies 4125 kHz and 6215 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

5.131 The frequency 4209.5 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.

5.132 The frequencies 4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16806.5 kHz, 19680.5 kHz, 22376 kHz and 26100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix 17).

5.133 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5130–5250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33).

5.134 The use of the bands 5900–5950 kHz, 7300–7350 kHz, 9400–9500 kHz, 11600–11650 kHz, 12050–12100 kHz, 13570–13600 kHz, 13800–13870 kHz, 15600–15800 kHz, 17480–17550 kHz and 18900–19020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix 11 or to any other spectrum-efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.

5.136 The band 5900–5950 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis, as well as to the following services: in Region 1 to the land mobile service on a primary basis, in Region 2 to the mobile except aeronautical mobile (R) service on a primary basis, and in Region 3 to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution 21 (Rev.WRC-95). After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned services, communicating

only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies 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.

5.137 On condition that harmful interference is not caused to the maritime mobile service, the bands 6200–6213.5 kHz and 6220.5–6525 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: 6765–6795 kHz (centre frequency 6780 kHz), 433.05–434.79 MHz (centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. 5.280, 61–61.5 GHz (centre frequency 61.25 GHz), 122–123 GHz (centre frequency 122.5 GHz), and 244–246 GHz (centre frequency 245 GHz)

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

5.139 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6765–7000 kHz to the land mobile service is on a primary basis (see No. 5.33).

5.140 *Additional allocation:* in Angola, Iraq, Rwanda, Somalia and Togo, the band 7000–7050 kHz is also allocated to the fixed service on a primary basis.

5.141 *Alternative allocation:* in Egypt, Eritrea, Ethiopia, Guinea, Libya and Madagascar, the band 7000–7050 kHz is allocated to the fixed service on a primary basis.

5.142 The use of the band 7100–7300 kHz in Region 2 by the amateur

service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3.

5.143 The band 7300–7350 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis and to the land mobile service on a secondary basis, subject to application of the procedure referred to in Resolution 21 (Rev.WRC-95). After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned 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. 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.

5.144 In Region 3, the stations of those services to which the band 7995–8005 kHz is allocated may transmit standard frequency and time signals.

5.145 The conditions for the use of the carrier frequencies 8291 kHz, 12290 kHz and 16420 kHz are prescribed in Articles 31 and 52 and in Appendix 13.

5.146 The bands 9400–9500 kHz, 11600–11650 kHz, 12050–12100 kHz, 15600–15800 kHz, 17480–17550 kHz and 18900–19020 kHz are allocated to the fixed service on a primary basis until 1 April 2007, subject to application of the procedure referred to in Resolution 21 (Rev.WRC-95). After 1 April 2007, frequencies in these bands may be used by stations in the 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.

5.147 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9775–9900 kHz, 11650–11700 kHz and 11975–12050 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.

5.148 The bands 9775–9900 kHz, 11650–11700 kHz, 11975–12050 kHz, 13600–13800 kHz, 15450–15600 kHz, 17550–17700 kHz and 21750–21850 kHz are allocated to the fixed service on

a primary basis subject to the procedure described in Resolution 8. The use of these bands by the broadcasting service shall be subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution 508). Within

13360–13410 kHz,
25550–25670 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,
1330–1400 MHz,
1610.6–1613.8 MHz,
1660–1670 MHz,
1718.8–1722.2 MHz,
2655–2690 MHz,
3260–3267 MHz,
3332–3339 MHz,
3345.8–3352.5 MHz,
4825–4835 MHz,
4950–4990 MHz,

these bands, the date of commencement of operations in the broadcasting service on a planned channel shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution 8, of all assignments to stations in the fixed service operating in accordance with the

4990–5000 MHz,
6650–6675.2 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,

Table and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations on that channel. (SUP—WRC–97)

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

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).

5.150 The following bands:

13553–13567 kHz (centre frequency 13560 kHz),
26957–27283 kHz (centre frequency 27120 kHz),
40.66–40.70 MHz (centre frequency 40.68 MHz),
902–928 MHz in Region 2 (centre frequency 915 MHz),
2400–2500 MHz (centre frequency 2450 MHz),
5725–5875 MHz (centre frequency 5800 MHz), and
24–24.25 GHz (centre frequency 24.125 GHz)

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

5.151 The bands 13570–13600 kHz and 13800–13870 kHz are allocated, until 1 April 2007, to the fixed service on a primary basis and to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution 21 (Rev.WRC–95). After 1 April 2007, frequencies in these bands

may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, Iran (Islamic Republic of), Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 14250–14350 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.

5.153 In Region 3, the stations of those services to which the band 15995–16005 kHz is allocated may transmit standard frequency and time signals.

5.154 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 18068–18168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW.

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

Federation, Tajikistan, Turkmenistan and Ukraine, the band 21850–21870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis.

5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21850–21870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

5.155B The band 21870–21924 kHz is used by the fixed service for provision of services related to aircraft flight safety.

5.156 *Additional allocation:* in Nigeria, the band 22720–23200 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

5.156A The use of the band 23200–23350 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

5.157 The use of the band 23350–24000 kHz by the maritime mobile service is limited to inter-ship radiotelegraphy.

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

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

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

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

5.163 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Estonia, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 47–48.5 MHz and 56.5–58 MHz are also allocated to the fixed and land mobile services on a secondary basis.

5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Côte d'Ivoire, Denmark, Spain, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Nigeria, Norway, the Netherlands, Poland, Syria, the United Kingdom, Senegal, Slovenia, Sweden, Switzerland, Swaziland, Togo, Tunisia, Turkey and Yugoslavia the band 47–68 MHz, in Romania the band 47–58 MHz and in the Czech Rep. the band 66–68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band.

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

5.166 *Alternative allocation:* in New Zealand, the band 50–51 MHz is allocated to the fixed, mobile and broadcasting services on a primary

basis; the band 53–54 MHz is allocated to the fixed and mobile services on a primary basis.

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

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.

5.169 *Alternative allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 50–54 MHz is allocated to the amateur service on a primary basis.

5.170 *Additional allocation:* in New Zealand, the band 51–53 MHz is also allocated to the fixed and mobile services on a primary basis.

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

5.172 *Different category of service:* in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 54–68 MHz to the fixed and mobile services is on a primary basis (see No. 5.33).

5.173 *Different category of service:* in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 68–72 MHz to the fixed and mobile services is on a primary basis (see No. 5.33).

5.174 *Alternative allocation:* in Bulgaria, Hungary, Poland and Romania, the band 68–73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference (Geneva, 1960).

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

5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), Estonia (subject to agreement obtained under No. 9.21), 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.

5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Latvia, Moldova, Uzbekistan, Poland, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 73–74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21.

5.178 *Additional allocation:* in Colombia, Costa Rica, Cuba, El Salvador, Guatemala, Guyana, Honduras and Nicaragua, the band 73–74.6 MHz is also allocated to the fixed and mobile services on a secondary basis.

5.179 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, China, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, 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.

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, Japan, and Syria, 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.

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.

5.184 *Additional allocation:* in Bulgaria and Romania, the band 76–87.5 MHz is also allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference (Geneva, 1960).

5.185 *Different category of service:* in the United States, the French Overseas Departments in Region 2, Guyana, Jamaica, Mexico and Paraguay, the allocation of the band 76–88 MHz to the fixed and mobile services is on a primary basis (see No. 5.33).

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

5.188 *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.

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

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.

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

5.197 *Additional allocation:* in Japan, Pakistan and Syria, 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.

5.198 *Additional allocation:* the band 117.975–136 MHz is also allocated to the aeronautical mobile-satellite (R)

service on a secondary basis, subject to agreement obtained under No. 9.21.

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

5.200 In the band 117.975–136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article 31 and Appendix 13 for distress and safety purposes with stations of the aeronautical mobile service.

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

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

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

5.203A *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136–137 MHz is also allocated

to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005.

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

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

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, Finland, France, Georgia, Greece, Kazakhstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Rep., Romania, the Russian Federation, 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).

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.

5.208A In making assignments to space stations in the mobile-satellite service in the bands 137–138 MHz, 387–390 MHz and 400.15–401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05–153 MHz, 322–328.6 MHz, 406.1–410 MHz and 608–614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in Table 1 of Recommendation ITU-R RA.769–1.

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.

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

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

5.212 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., the Congo, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Nigeria, Oman, Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138–144 MHz is allocated to the fixed and mobile services on a primary basis.

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

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

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

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

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

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

of the fixed, mobile and space operation services in the band 148–149.9 MHz.

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

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

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

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

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

5.224A The use of the bands 149.9–150.05 MHz and 399.9–400.05 MHz by the mobile-satellite service (Earth-to-space) is limited to the land mobile-

satellite service (Earth-to-space) until 1 January 2015.

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

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

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

In the bands 156–156.7625 MHz, 156.8375–157.45 MHz, 160.6–160.975 MHz and 161.475–162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 13).

Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

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

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

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

5.230 *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, China and Pakistan, 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.

5.232 *Additional allocation:* in Japan, the band 170–174 MHz is also allocated to the broadcasting service on a primary basis.

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.

5.234 *Different category of service:* in Mexico, the allocation of the band 174–216 MHz to the fixed and mobile services is on a primary basis (see No. 5.33).

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

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

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.

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

5.242 *Additional allocation:* in Canada, the band 216–220 MHz is also

allocated to the land mobile service on a primary basis.

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

5.245 *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.

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

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

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

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

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

5.254 The bands 235–322 MHz and 335.4–399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. 9.21, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations.

5.255 The bands 312–315 MHz (Earth-to-space) and 387–390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-

geostationary-satellite systems. Such use is subject to coordination under No. 9.11A.

5.256 The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes (see Appendix 13).

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

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

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

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

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

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

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

5.264 The use of the band 400.15–401 MHz by the mobile-satellite service is subject to coordination under No.

9.11A. The power flux-density limit indicated in Annex 1 of Appendix 5 shall apply until such time as a competent world radiocommunication conference revises it.

5.266 The use of the band 406–406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radiobeacons (see also Article 31 and Appendix 13).

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

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

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 Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420–460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

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

5.273 *Different category of service:* in Denmark, Libya and Norway, the allocation of the bands 430–432 MHz and 438–440 MHz to the radiolocation service is on a secondary basis (see No. 5.32).

5.274 *Alternative allocation:* in Denmark, Norway and Sweden, the bands 430–432 MHz and 438–440 MHz are allocated to the fixed and mobile,

except aeronautical mobile, services on a primary basis.

5.275 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Estonia, Finland, Latvia, The Former Yugoslav Republic of Macedonia, Libya, Slovenia and Yugoslavia, the bands 430–432 MHz and 438–440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.]

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

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

5.278 *Different category of service:* in Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama and Venezuela, the allocation of the band 430–440 MHz to the amateur service is on a primary basis (see No. 5.33).

5.279 *Additional allocation:* in Mexico, the bands 430–435 MHz and 438–440 MHz are also allocated on a primary basis to the land mobile service, subject to agreement obtained under No. 9.21. 5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Portugal, Slovenia, Switzerland and Yugoslavia, the band 433.05–434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 15.13.

5.281 *Additional allocation:* in the French Overseas Departments 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, 1260–1270 MHz, 2400–2450 MHz, 3400–3410 MHz (in Regions 2 and 3 only) and 5650–5670 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 1260–1270 MHz and 5650–5670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

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

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

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

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

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

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.

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.

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

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

5.287 In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174 (see Resolution 341 (WRC-97)).

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

5.289 Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460–470 MHz and 1690–1710 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, Japan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, 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.

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.

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

5.292 *Different category of service:* in Mexico and Venezuela, the allocation of the band 470–512 MHz to the fixed and mobile services, and in Argentina and Uruguay to the mobile service, is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21.

5.293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470–512 MHz and 614–806 MHz to the fixed and mobile services is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. In Argentina and Ecuador, the allocation of the band 470–512 MHz to the fixed and mobile services is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21.

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

5.296 *Additional allocation:* in Germany, Austria, Belgium, Cyprus, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libya, Lithuania, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470–790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote.

5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512–608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. 9.21.

5.298 *Additional allocation:* in India, the band 549.75–550.25 MHz is also allocated to the space operation

service (space-to-Earth) on a secondary basis.

5.300 *Additional allocation:* in Israel, Libya, Syria and Sudan, the band 582–790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

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

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

5.305 *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.

5.309 *Different category of service:* in Costa Rica, El Salvador and Honduras, the allocation of the band 614–806 MHz to the fixed service is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21.

5.311 Within the frequency band 620–790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions 33 (Rev.WRC-97) and 507). Such stations shall not produce a power flux-density in excess of the value -129 dB(W/m²) for angles of arrival less than 20° (see Recommendation 705) within the territories of other countries without the consent of the administrations of those countries.

5.312 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine,

the band 645–862 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

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

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

5.316 *Additional allocation:* in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Israel, Kenya, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Syria, Sweden, Switzerland and Yugoslavia, the band 790–830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830–862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band.

5.317 *Additional allocation:* in Region 2 (except Brazil and the United States), the band 806–890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21. The use of this service is intended for operation within national boundaries.

5.317A Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806–960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution 224 (WRC-2000)). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

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

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

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

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

5.322 In Region 1, in the band 862–960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. 5.10 to 5.13) excluding Algeria, Egypt, Spain, Libya, Morocco, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. 9.21.

5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 862–960 MHz is also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. 9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime.

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

5.325A *Different category of service:* in Cuba, the allocation of the band 902–915 MHz to the land mobile service is on a primary basis.

5.326 *Different category of service:* in Chile, the band 903–905 MHz is allocated to the mobile, except aeronautical mobile, service on a

primary basis, subject to agreement obtained under No. 9.21.

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).

5.328 The use of the band 960–1215 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.

5.328A *Additional allocation:* the band 1164–1215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations of all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of –115 dB(W/m²) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service. The provisions of Resolution 605 (WRC-2000) apply.

5.329 Use of the radionavigation-satellite service in the band 1215–1300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. 5.331. See also Resolution 606 (WRC-2000).

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1215–1300 MHz and 1559–1610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table.

5.330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Morocco, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo and Yemen, the band 1215–1300 MHz is also allocated to the fixed and mobile services on a primary basis.

5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, Iran (Islamic Republic of), Iraq, Kenya, The Former Yugoslav Republic of

Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1215–1300 MHz is also allocated to the radionavigation service on a primary basis.

5.332 In the band 1215–1260 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.

5.333 In the bands 1215–1300 MHz, 3100–3300 MHz, 5250–5350 MHz, 8550–8650 MHz, 9500–9800 MHz and 13.4–14.0 GHz, radiolocation stations installed on spacecraft may also be employed for the earth exploration-satellite and space research services on a secondary basis. (SUP–WRC–97)

5.334 *Additional allocation:* in Canada and the United States, the bands 1240–1300 MHz and 1350–1370 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

5.335 In Canada and the United States in the band 1240–1300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service.

5.335A In the band 1260–1300 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.

5.337 The use of the bands 1300–1350 MHz, 2700–2900 MHz and 9000–9200 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 1300–1350 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.

5.338 In Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1350–1400 MHz.

5.339 The bands 1370–1400 MHz, 2640–2655 MHz, 4950–4990 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:

1400–1427 MHz,
2690–2700 MHz, except those provided for by Nos. 5.421 and 5.422,
10.68–10.7 GHz, except those provided for by No. 5.483,
15.35–15.4 GHz, except those provided for by No. 5.511,
23.6–24 GHz,
31.3–31.5 GHz,
31.5–31.8 GHz, in Region 2,
48.94–49.04 GHz, from airborne stations,
50.2–50.4 GHz,² except those provided for by No. 5.555A,
52.6–54.25 GHz,
86–92 GHz,
100–102 GHz,
109.5–111.8 GHz,
114.25–116 GHz,
148.5–151.5 GHz,
164–167 GHz,
182–185 GHz, except those provided for by No. 5.563,
190–191.8 GHz,
200–209 GHz,
226–231.5 GHz,
250–252 GHz.

5.341 In the bands 1400–1727 MHz, 101–120 GHz and 197–220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

5.342 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Uzbekistan, Kyrgyzstan, the Russian Federation and Ukraine, the band 1429–1535 MHz is also allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the band 1452–1492 MHz is subject to agreement between the administrations concerned.

5.343 In Region 2, the use of the band 1435–1535 MHz by the aeronautical mobile service for

telemetry has priority over other uses by the mobile service.

5.344 *Alternative allocation:* in the United States, the band 1452–1525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. 5.343).

5.345 Use of the band 1452–1492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (WARC–92).

5.347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Kenya, Mozambique, Portugal, Sri Lanka, Swaziland, Yemen, Yugoslavia and Zimbabwe, the allocation of the band 1452–1492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007.

5.348 The use of the band 1492–1525 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. However, no coordination threshold in Article 21 for space stations of the mobile-satellite service with respect to terrestrial services shall apply to the situation referred to in No. 5.343. With respect to the situation referred to in No. 5.343, the requirement for coordination in the band 1492–1525 MHz will be determined by band overlap.

5.348A In the band 1492–1525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. 9.11A for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be -150 dB(W/m²) in any 4 kHz band for all angles of arrival, instead of those given in Table 5–2 of Appendix 5. The above threshold level of the power flux-density shall apply until it is changed by a competent world radiocommunication conference.

5.349 *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, Yemen and Yugoslavia, the allocation of the band 1525–1530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33).

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

5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the band 1525–1530 MHz is also allocated to the aeronautical mobile service on a primary basis.

5.351 The bands 1525–1544 MHz, 1545–1559 MHz, 1626.5–1645.5 MHz and 1646.5–1660.5 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 1525–1544 MHz, 1545–1559 MHz, 1610–1626.5 MHz, 1626.5–1645.5 MHz, 1646.5–1660.5 MHz, 1980–2010 MHz, 2170–2200 MHz, 2483.5–2500 MHz, 2500–2520 MHz and 2670–2690 MHz by the mobile-satellite service, see Resolutions 212 (Rev.WRC–97) and 225 (WRC–2000).

5.352A In the band 1525–1530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in France and French overseas territories in Region 3, Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Syria, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998.

5.353A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1530–1544 MHz and 1626.5–1645.5 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.)

5.354 The use of the bands 1525–1559 MHz and 1626.5–1660.5 MHz by the mobile-satellite services is subject to coordination under No. 9.11A.

5.355 *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait,

Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the bands 1540–1559 MHz, 1610–1645.5 MHz and 1646.5–1660 MHz are also allocated to the fixed service on a secondary basis.

5.356 The use of the band 1544–1545 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 1545–1555 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.

5.357A In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1545–1555 MHz and 1646.5–1656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC–2000) shall apply.)

5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakhstan, Kuwait, Latvia, Lebanon, Libya, Lithuania, Mali, Morocco, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1550–1559 MHz, 1610–1645.5 MHz and 1646.5–1660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands.

5.362A In the United States, in the bands 1555–1559 MHz and 1656.5–1660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services.

5.362B *Additional allocation:* The band 1559–1610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Syria and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band.

5.362C *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1559–1610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band.

5.363 *Alternative allocation:* in Sweden, the band 1590–1626.5 MHz is allocated to the aeronautical radionavigation service on a primary basis.

5.364 The use of the band 1610–1626.5 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 1613.8–1626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under No. 9.11A.

5.366 The band 1610–1626.5 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 1610–1626.5 MHz and 5000–5150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21.

5.368 With respect to the radiodetermination-satellite and mobile-satellite services the provisions of No. 4.10 do not apply in the band 1610–1626.5 MHz, with the exception of the aeronautical radionavigation-satellite service.

5.369 *Different category of service:* in Angola, Australia, Burundi, China, Côte d'Ivoire, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Senegal, Sudan, Swaziland, Togo and Zambia, the allocation of the band 1610–1626.5 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.

5.370 *Different category of service:* in Venezuela, the allocation to the

radiodetermination-satellite service in the band 1610–1626.5 MHz (Earth-to-space) is on a secondary basis.

5.371 *Additional allocation:* in Region 1, the bands 1610–1626.5 MHz (Earth-to-space) and 2483.5–2500 MHz (space-to-Earth) are also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. 9.21.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6–1613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. 29.13 applies).

5.374 Mobile earth stations in the mobile-satellite service operating in the bands 1631.5–1634.5 MHz and 1656.5–1660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. 5.359.

5.375 The use of the band 1645.5–1646.5 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 1646.5–1656.5 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 1660–1660.5 MHz shall not cause harmful interference to stations in the radio astronomy service.

5.377 In the band 1675–1710 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, the meteorological-satellite and meteorological aids services (see Resolution 213 (Rev.WRC-95)³) and the use of this band shall be subject to coordination under No. 9.11A.

5.379 *Additional allocation:* in Bangladesh, India, Indonesia, Nigeria and Pakistan, the band 1660.5–1668.4 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 1660.5–1668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1664.4–1668.4 MHz as soon as practicable.

5.380 The bands 1670–1675 MHz and 1800–1805 MHz are intended for

use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The use of the band 1670–1675 MHz by stations in the systems for public correspondence with aircraft is limited to transmissions from aeronautical stations and the use of the band 1800–1805 MHz is limited to transmissions from aircraft stations.

5.381 *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, Iran (Islamic Republic of), Malaysia, Pakistan and Sri Lanka, the band 1690–1700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.382 *Different category of service:* in Saudi Arabia, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, Syria, Kyrgyzstan, Romania, Russian Federation, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1690–1700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33), and in the Dem. People's Rep. of Korea, the allocation of the band 1690–1700 MHz to the fixed service is on a primary basis (see No. 5.33) and to the mobile, except aeronautical mobile, service on a secondary basis.

5.384 *Additional allocation:* in India, Indonesia and Japan, the band 1700–1710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis.

5.384A The bands, or portions of the bands, 1710–1885 MHz and 2500–2690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution 223 (WRC-2000). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

5.385 *Additional allocation:* the band 1718.8–1722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

5.386 *Additional allocation:* the band 1750–1850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Australia, India, Indonesia and Japan on a primary basis,

³ Note by the Secretariat: This Resolution was abrogated by WRC-2000.

subject to agreement obtained under No. 9.21, having particular regard to troposcatter systems.

5.387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, the band 1770–1790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. 9.21.

5.388 The bands 1885–2025 MHz and 2110–2200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT–2000). Such use does not preclude the use of these bands by other services to which they are allocated. The bands should be made available for IMT–2000 in accordance with Resolution 212 (Rev.WRC–97). (See also Resolution 223 (WRC–2000).)

5.388A In Regions 1 and 3, the bands 1885–1980 MHz, 2010–2025 MHz and 2110–2170 MHz and, in Region 2, the bands 1885–1980 MHz and 2110–2160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT–2000), in accordance with Resolution 221 (WRC–2000). The use by IMT–2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

5.389A The use of the bands 1980–2010 MHz and 2170–2200 MHz by the mobile-satellite service is subject to coordination under No. 9.11A and to the provisions of Resolution 716 (WRC–95)⁴. The use of these bands shall not commence before 1 January 2000; however the use of the band 1980–1990 MHz in Region 2 shall not commence before 1 January 2005.

5.389B The use of the band 1980–1990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

5.389C The use of the bands 2010–2025 MHz and 2160–2170 MHz in Region 2 by the mobile-satellite service shall not commence before 1 January 2002 and is subject to coordination

under No. 9.11A and to the provisions of Resolution 716 (WRC–95)⁴.

5.389D In Canada and the United States the use of the bands 2010–2025 MHz and 2160–2170 MHz by the mobile-satellite service shall not commence before 1 January 2000.

5.389E The use of the bands 2010–2025 MHz and 2160–2170 MHz by the mobile-satellite service in Region 2 shall not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3.

5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syria and Tunisia, the use of the bands 1980–2010 MHz and 2170–2200 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.

5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, the use of the bands 2010–2025 MHz and 2160–2170 MHz by the mobile-satellite services shall not cause harmful interference to stations in the fixed and mobile services before 1 January 2005. After this date, the use of these bands is subject to coordination under No. 9.11A and to the provisions of Resolution 716 (WRC–95).⁵

5.391 In making assignments to the mobile service in the bands 2025–2110 MHz and 2200–2290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU–R SA.1154, and shall take that Recommendation into account for the introduction of any other type of mobile system.

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 2025–2110 MHz and 2200–2290 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.

5.392A *Additional allocation:* in Russian Federation, the band 2160–2200 MHz is also allocated to the space research service (space-to-Earth) on a primary basis until 1 January 2005. Stations in the space research service shall not cause harmful interference to,

or claim protection from, stations in the fixed and mobile services operating in this frequency band.

5.393 *Additional allocation:* in the United States, India and Mexico, the band 2310–2360 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 (WARC–92), with the exception of resolves 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz.

5.394 In the United States, the use of the band 2300–2390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2300–2483.5 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

5.395 In France, the use of the band 2310–2360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

5.396 Space stations of the broadcasting-satellite service in the band 2310–2360 MHz operating in accordance with No. 5.393 that may affect the services to which this band is allocated in other countries shall be coordinated and notified in accordance with Resolution 33 (Rev.WRC–97). Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use.

5.397 *Different category of service:* in France, the band 2450–2500 MHz is allocated on a primary basis to the radiolocation service (see No. 5.33). Such use is subject to agreement with administrations having services operating or planned to operate in accordance with the Table of Frequency Allocations which may be affected.

5.398 In respect of the radiodetermination-satellite service in the band 2483.5–2500 MHz, the provisions of No. 4.10 do not apply.

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

5.400 *Different category of service:* in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Sudan, Swaziland, Togo and Zambia, the

⁴ Note by the Secretariat: This Resolution was revised by WRC–2000.

⁵ Note by the Secretariat: This Resolution was revised by WRC–2000.

allocation of the band 2483.5–2500 MHz to the radiodetermination-satellite service (space-to-Earth) is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21 from countries not listed in this provision.

5.402 The use of the band 2483.5–2500 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 2483.5–2500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4990–5000 MHz band allocated to the radio astronomy service worldwide.

5.403 Subject to agreement obtained under No. 9.21, the band 2520–2535 MHz (until 1 January 2005 the band 2500–2535 MHz) may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. 9.11A apply.

5.404 *Additional allocation:* in India and Iran (Islamic Republic of), the band 2500–2516.5 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.

5.405 *Additional allocation:* in France, the band 2500–2550 MHz is also allocated to the radiolocation service on a primary basis. Such use is subject to agreement with the administrations having services operating or planned to operate in accordance with the Table which may be affected.

5.407 In the band 2500–2520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed -152 dB(W/(m^2 4 kHz)) in Argentina, unless otherwise agreed by the administrations concerned.

5.409 Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2500–2690 MHz.

5.410 The band 2500–2690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. 9.21.

5.411 When planning new tropospheric scatter radio-relay links in the band 2500–2690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.

5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan and Turkmenistan, the band 2500–2690 MHz is allocated to the fixed and

mobile, except aeronautical mobile, services on a primary basis.

5.413 In the design of systems in the broadcasting-satellite service in the bands between 2500 MHz and 2690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2690–2700 MHz.

5.414 The allocation of the frequency band 2500–2520 MHz to the mobile-satellite service (space-to-Earth) shall be effective on 1 January 2005 and is subject to coordination under No. 9.11A.

5.415 The use of the bands 2500–2690 MHz in Region 2 and 2500–2535 MHz and 2655–2690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. 9.21, giving particular attention to the broadcasting-satellite service in Region 1. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Article 21, Table 21–4.

5.415A *Additional allocation:* in India and Japan, subject to agreement obtained under No. 9.21, the band 2515–2535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries.

5.416 The use of the band 2520–2670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. 9.21. The power flux-density at the Earth's surface shall not exceed the values given in Article 21, Table 21–4.

5.418 *Additional allocation:* in Bangladesh, Belarus, Korea (Rep. of), India, Japan, Pakistan, Singapore, Sri Lanka and Thailand, the band 2535–2655 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 (WARC–92). 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 (WRC–2000).

5.418A In certain Region 3 countries listed in No. 5.418, use of the band 2630–2655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the

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

5.418B Use of the band 2630–2655 MHz by non-geostationary-satellite systems for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. 9.12. Resolution 539 (WRC–2000) applies.

5.418C Use of the band 2630–2655 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. 9.13 with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), and No. 22.2 does not apply. Resolution 539 (WRC–2000) applies.

5.419 The allocation of the frequency band 2670–2690 MHz to the mobile-satellite service shall be effective from 1 January 2005. When introducing systems of the mobile-satellite service in this band, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. 9.11A.

5.420 The band 2655–2670 MHz (until 1 January 2005 the band 2655–2690 MHz) may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. 9.21. The coordination under No. 9.11A applies.

5.420A *Additional allocation:* in India and Japan, subject to agreement obtained under No. 9.21, the band 2670–2690 MHz may also be used for the aeronautical mobile-satellite service (Earth-to-space) for operation limited to within their national boundaries.

5.421 *Additional allocation:* in Germany and Austria, the band 2690–2695 MHz is also allocated to the fixed service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo, Cote d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Malaysia, Mali, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen and Yugoslavia, the band 2690–2700 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.

5.423 In the band 2700–2900 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 2850–2900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

5.425 In the band 2900–3100 MHz, the use of the shipborne interrogator-transponder system (SIT) shall be confined to the sub-band 2930–2950 MHz.

5.426 The use of the band 2900–3100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

5.427 In the bands 2900–3100 MHz and 9300–9500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. 4.9.

5.428 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3100–3300 MHz is also allocated to the radionavigation service on a primary basis.

5.429 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, the Congo, Korea (Rep. of), the United Arab Emirates, India, Indonesia, Iran (Islamic

Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Dem. People's Rep. of Korea and Yemen, the band 3300–3400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3300–3400 MHz is also allocated to the radionavigation service on a primary basis.

5.431 *Additional allocation:* in Germany, Israel, Nigeria and the United Kingdom, the band 3400–3475 MHz is also allocated to the amateur service on a secondary basis.

5.432 *Different category of service:* in Korea (Rep. of), Japan and Pakistan, the allocation of the band 3400–3500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33).

5.433 In Regions 2 and 3, in the band 3400–3600 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.

5.435 In Japan, in the band 3620–3700 MHz, the radiolocation service is excluded.

5.438 Use of the band 4200–4400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

5.439 *Additional allocation:* in Iran (Islamic Republic of) and Libya, the band 4200–4400 MHz is also allocated to the fixed service on a secondary basis.

5.440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4202 MHz for space-to-Earth transmissions and the frequency 6427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 2 MHz of these frequencies, subject to agreement obtained under No. 9.21.

5.441 The use of the bands 4500–4800 MHz (space-to-Earth), 6725–7025 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.

5.442 In the bands 4825–4835 MHz and 4950–4990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service.

5.443 *Different category of service:* in Argentina, Australia and Canada, the allocation of the bands 4825–4835 MHz and 4950–4990 MHz to the radio astronomy service is on a primary basis (see No. 5.33).

5.443A *Additional allocation:* The band 5000–5010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution 603 (WRC-2000).

5.443B *Additional allocation:* The band 5010–5030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5030–5150 MHz by all the space stations within any radionavigation-

satellite service system (space-to-Earth) operating in the band 5010–5030 MHz shall not exceed “124.5 dB(W/m²) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4990–5000 MHz, the aggregate power flux-density produced in the 4990–5000 MHz band by all the space stations within any radionavigation-satellite service (space-to-Earth) system operating in the 5010–5030 MHz band shall not exceed the provisional value of –171 dB(W/m²) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution 604 (WRC–2000) applies.

5.444 The band 5030–5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. 5.444A and Resolution 114 (WRC–95) apply.

5.444A *Additional allocation:* the band 5091–5150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems and is subject to coordination under No. 9.11A.

In the band 5091–5150 MHz, the following conditions also apply:

- Prior to 1 January 2010, the use of the band 5091–5150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution 114 (WRC–95);
- Prior to 1 January 2010, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5000–5091 MHz band, shall take precedence over other uses of this band;
- After 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- After 1 January 2010, the fixed-satellite service will become secondary to the aeronautical radionavigation service.

5.446 *Additional allocation:* in the countries listed in Nos. 5.369 and 5.400, the band 5150–5216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. 9.21. In Region 2, the band is also allocated to the radiodetermination-satellite service

(space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. 5.369 and 5.400, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the bands 1610–1626.5 MHz and/or 2483.5–2500 MHz. The total power flux-density at the Earth’s surface shall in no case exceed –159 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5150–5250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. 9.21.

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 5150–5216 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 5150–5216 MHz shall in no case exceed –164 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.447C Administrations responsible for fixed-satellite service networks in the band 5150–5250 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 5250–5255 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.

5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, the band 5250–5350 MHz is also allocated to the radionavigation service on a primary basis.

5.448A The use of the frequency band 5250–5350 MHz by the earth exploration-satellite (active) and space research (active) services shall not constrain the future development and deployment of the radiolocation service.

5.448B The earth exploration-satellite (active) service operating in the band 5350–5460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service.

5.449 The use of the band 5350–5470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

5.450 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 5470–5650 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

5.451 *Additional allocation:* in the United Kingdom, the band 5470–5850 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 5725–5850 MHz.

5.452 Between 5600 MHz and 5650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People’s Rep. of Korea, Singapore, Swaziland, Tanzania, Chad and Yemen, the band 5650–5850 MHz is also allocated to the fixed and mobile services on a primary basis.

5.454 *Different category of service:* in Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan,

Turkmenistan and Ukraine, the allocation of the band 5670–5725 MHz to the space research service is on a primary basis (see No. 5.33).

5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 5670–5850 MHz is also allocated to the fixed service on a primary basis.

5.456 *Additional allocation:* in Germany and in Cameroon, the band 5755–5850 MHz is also allocated to the fixed service on a primary basis.

5.458 In the band 6425–7075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7075–7250 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 6425–7025 MHz and 7075–7250 MHz.

5.458A In making assignments in the band 6700–7075 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 6650–6675.2 MHz from harmful interference from unwanted emissions.

5.458B The space-to-Earth allocation to the fixed-satellite service in the band 6700–7075 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 6700–7075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. 22.2.

5.458C Administrations making submissions in the band 7025–7075 MHz (Earth-to-space) for geostationary-satellite systems in the fixed-satellite service after 17 November 1995 shall consult on the basis of relevant ITU-R Recommendations with the administrations that have notified and brought into use non-geostationary-satellite systems in this frequency band before 18 November 1995 upon request of the latter administrations. This consultation shall be with a view to facilitating shared operation of both geostationary-satellite systems in the fixed-satellite service and non-geostationary-satellite systems in this band.

5.459 *Additional allocation:* in Russian Federation, the frequency bands

7100–7155 MHz and 7190–7235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21.

5.460 *Additional allocation:* the band 7145–7235 MHz is also allocated to the space research (Earth-to-space) service on a primary basis, subject to agreement obtained under No. 9.21. The use of the band 7145–7190 MHz is restricted to deep space; no emissions to deep space shall be effected in the band 7190–7235 MHz.

5.461 *Additional allocation:* the bands 7250–7375 MHz (space-to-Earth) and 7900–8025 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 7450–7550 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.

5.461B The use of the band 7750–7850 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems.

5.462A In Regions 1 and 3 (except for Japan), in the band 8025–8400 MHz, the earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration:

- 174 dB(W/m²) in a 4 kHz band for $0 \leq \theta < 5^\circ$
- $174 + 0.5 (\theta - 5)$ dB(W/m²) in a 4 kHz band for $5 \leq \theta < 25^\circ$
- 164 dB(W/m²) in a 4 kHz band for $25 \leq \theta \leq 90^\circ$

These values are subject to study under Resolution 124 (WRC-97).⁶

5.463 Aircraft stations are not permitted to transmit in the band 8025–8400 MHz.

5.465 In the space research service, the use of the band 8400–8450 MHz is limited to deep space.

5.466 *Different category of service:* in Israel, Malaysia, Singapore and Sri Lanka, the allocation of the band 8400–8500 MHz to the space research service is on a secondary basis (see No. 5.32).

5.467 *Alternative allocation:* in the United Kingdom, the band 8400–8500 MHz is allocated to the radiolocation and space research services on a primary basis.

5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syria, Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8500–8750 MHz is also allocated to the fixed and mobile services on a primary basis.

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8500–8750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

5.469A In the band 8550–8650 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.

5.470 The use of the band 8750–8850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8800 MHz.

5.471 *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the bands 8825–8850 MHz and 9000–9200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only.

5.472 In the bands 8850–9000 MHz and 9200–9225 MHz, the maritime radionavigation service is limited to shore-based radars.

5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8850–9000 MHz and 9200–9300 MHz are also allocated to the radionavigation service on a primary basis.

5.474 In the band 9200–9500 MHz, search and rescue transponders (SART) may be used, having due regard to the

⁶ Note by the Secretariat: This Resolution was revised by WRC-2000.

appropriate ITU-R Recommendation (see also Article 31).

5.475 The use of the band 9300–9500 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 9300–9320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. In the band 9300–9500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

5.476 In the band 9300–9320 MHz in the radionavigation service, the use of shipborne radars, other than those existing on 1 January 1976, is not permitted until 1 January 2001.

5.476A In the band 9500–9800 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radionavigation and radiolocation services.

5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Sweden, Trinidad and Tobago, and Yemen, the allocation of the band 9800–10000 MHz to the fixed service is on a primary basis (see No. 5.33).

5.478 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 9800–10000 MHz is also allocated to the radionavigation service on a primary basis.

5.479 The band 9975–10025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

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

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

band 10.45–10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

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

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

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

5.484A The use of the bands 10.95–11.2 GHz (space-to-Earth), 11.45–11.7 GHz (space-to-Earth), 11.7–12.2 GHz (space-to-Earth) in Region 2, 12.2–12.75 GHz (space-to-Earth) in Region 3, 12.5–12.75 GHz (space-to-Earth) in Region 1, 13.75–14.5 GHz (Earth-to-space), 17.8–18.6 GHz (space-to-Earth), 19.7–20.2 GHz (space-to-Earth), 27.5–28.6 GHz (Earth-to-space), 29.5–30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of

receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

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

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

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

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.

5.488 The use of the band 11.7–12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to the provisions of Resolution 77 (WRC–2000). For the use of the band 12.2–12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix 30.

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

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

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

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.

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

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

Qatar, Dem. Rep. of the Congo, Syria, Senegal, Somalia, Sudan, Chad, Togo and Yemen, the band 12.5–12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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

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

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.

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

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

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

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

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.

5.502 In the band 13.75–14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. 5.43A does not apply. See Resolution 733 (WRC–2000).

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

- The e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;
- The e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use

by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

5.503A Until 1 January 2000, stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services. After that date, these non-geostationary space stations will operate on a secondary basis in relation to the fixed-satellite service.

Additionally, when planning earth stations in the fixed-satellite service to be brought into service between 1 January 2000 and 1 January 2001, in order to accommodate the needs of spaceborne precipitation radars operating in the band 13.793–13.805 GHz, advantage should be taken of the consultation process and the information given in Recommendation ITU-R SA.1071.

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

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

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.

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

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

5.510 The use of the band 14.5–14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for

the broadcasting-satellite service. This use is reserved for countries outside Europe.

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

5.511A The band 15.43–15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43–15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. 9.11A. The use of the frequency band 15.43–15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35–15.4 GHz, the aggregate power flux-density radiated in the 15.35–15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43–15.63 GHz band shall not exceed the level of -156 dB(W/m²) in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time.

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

5.511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4–

15.43 GHz and 15.63–15.7 GHz in the space-to-Earth direction and 15.63–15.65 GHz in the Earth-to-space direction. In the bands 15.4–15.43 GHz and 15.65–15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival. In the band 15.63–15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival, it shall coordinate under No. 9.11A with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63–15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. 4.10 applies).

5.512 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Malaysia, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Yemen and Yugoslavia, the band 15.7–17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

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.

5.514 *Additional allocation:* in Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan and Yugoslavia, the band 17.3–17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 21.3 and 21.5 shall apply.

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

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

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

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

5.519 *Additional allocation:* the band 18.1–18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites

and shall be in accordance with the provisions of Article 21, Table 21–4.

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

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

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.

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.

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

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.

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

5.523C No. 22.2 shall continue to apply in the bands 19.3–19.6 GHz and

29.1–29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995.

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.

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

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

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

higher parts of the bands 19.7–20.2 GHz and 29.5–30 GHz.

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

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

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

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

5.530 In Regions 1 and 3, the allocation to the broadcasting-satellite service in the band 21.4–22 GHz shall come into effect on 1 April 2007. The use of this band by the broadcasting-satellite service after that date and on an interim basis prior to that date is subject to the provisions of Resolution 525 (WARC-92).

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

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

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

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

5.535 In the band 24.75–25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have

priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.

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

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

5.536A Administrations installing Earth exploration-satellite service earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the Earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

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

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

5.537A In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation

to the fixed service in the band 27.5–28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5–28.35 GHz by HAPS is limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services.

5.538 *Additional allocation:* the bands 27.500–27.501 GHz and 29.999–30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of 10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. In the band 27.500–27.501 GHz, such space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article 21, Table 21–4 on the Earth's surface.

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

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

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

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

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

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

5.543A In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31–31.3 GHz may also be used by high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31–31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. 5.545. The use of HAPS in the band 31–31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3–31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the deployment of HAPS in the band 31–31.3 GHz to the lower half of this band (31–31.15 GHz) until WRC-03.

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

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

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

Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5–31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33).

5.547 The bands 31.8–33.4 GHz, 37–40 GHz, 40.5–43.5 GHz, 51.4–52.6 GHz, 55.78–59 GHz and 64–66 GHz are available for high-density applications in the fixed service (see Resolutions 75 (WRC-2000) and 79 (WRC-2000)). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5–40 GHz and 40.5–42 GHz, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution 84 (WRC-2000)).

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.

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.

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

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.

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

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

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Malta, Morocco,

Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Dem. Rep. of the Congo, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4–36 GHz is also allocated to the fixed and mobile services on a primary basis.

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

5.551 Radars located on spacecraft may be operated on a primary basis in the band 35.5–35.6 GHz. (SUP—WRC-97)

5.551A In the band 35.5–36.0 GHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the meteorological aids service and other services allocated on a primary basis.

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

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).

5.551G In order to protect the radio astronomy service in the band 42.5–43.5 GHz, the aggregate power flux-density in the 42.5–43.5 GHz band produced by all the space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) system operating in the 41.5–42.5 GHz band shall not exceed—167 dB(W/m²) in any 1 MHz band at the site of a radio astronomy station for more than 2% of the time. The power flux-density in the band 42.5–43.5 GHz produced by any geostationary station in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) operating in the band 42–42.5 GHz shall not exceed—167 dB(W/m²) in any 1 MHz band at the site of a radio astronomy station. These

limits are provisional and will be reviewed in accordance with Resolution 128 (Rev.WRC-2000).

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

5.552A The allocation to the fixed service in the bands 47.2–47.5 GHz and 47.9–48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2–47.5 GHz and 47.9–48.2 GHz is subject to the provisions of Resolution 122 (WRC-97)⁷

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).

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.

5.555 *Additional allocation:* the band 48.94–49.04 GHz is also allocated to the radio astronomy service on a primary basis.

5.555A The band 50.2–50.4 GHz is also allocated, on a primary basis, to the fixed and mobile services until 1 July 2000.

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.

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 1000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ for all angles of arrival.

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.

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

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) .

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).

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 1000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ for all angles of arrival.

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).

5.559A The band 75.5–76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

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.

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

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.

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.

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.

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

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 1000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-148 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival.

5.562D *Additional allocation:* In Korea (Rep. of), the 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 until 2015.

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

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

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

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 1000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival.

5.563 *Additional allocation:* in the United Kingdom, the band 182–185 GHz is also allocated to the fixed and mobile services on a primary basis.

⁷ Note by the Secretariat: This Resolution was revised by 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.

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.

5.565 The frequency band 275–1000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

13360–13410 kHz,
37.5–38.25 MHz,
322–328.6 MHz*,
1330–1400 MHz*,
1610.6–1613.8 MHz*,
1660–1670 MHz,
3260–3267 MHz*,
3332–3339 MHz*,
3345.8–3352.5 MHz*,
4825–4835 MHz*,
14.47–14.5 GHz*,
22.01–22.21 GHz*,
22.21–22.5 GHz,

are allocated (* indicates radio astronomy use for spectral line observations), all practicable steps shall be taken to protect the radio astronomy service from harmful interference. Emissions from spaceborne or air-borne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29 of the ITU Radio Regulations).

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US356 In the band 13.75–14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation service towards the geostationary-satellite orbit shall not exceed 59 dBW. Receiving space stations in the fixed-satellite service shall not claim protection from radiolocation transmitting stations operating in accordance with the United States Table of Frequency Allocations. ITU Radio Regulation No. 5.43A does not apply.

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US369 *Additional allocation:* the bands 150–151 GHz, 174.42–175.02 GHz, 177–177.4 GHz, 178.2–178.6 GHz, 181–181.46 GHz, 186.2–186.6 GHz and 257.5–258 GHz are also allocated to the radio astronomy service on a secondary basis for spectral line observations.

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

—Earth exploration-satellite service (passive) and space research service (passive): 275–277 GHz, 294–306 GHz, 316–334 GHz, 342–349 GHz, 363–365 GHz, 371–389 GHz, 416–434 GHz, 442–444 GHz, 496–506 GHz, 546–568 GHz, 624–629 GHz, 634–654 GHz, 659–661 GHz, 684–692 GHz, 730–732 GHz, 851–853 GHz and 951–956 GHz.

Future research in this largely unexplored spectral region may yield

22.81–22.86 GHz*,
23.07–23.12 GHz*,
31.2–31.3 GHz,
36.43–36.5 GHz*,
42.5–43.5 GHz,
48.94–49.04 GHz*,
93.07–93.27 GHz*,
97.88–98.08 GHz*,
140.69–140.98 GHz*,
144.68–144.98 GHz*,
145.45–145.75 GHz*,
146.82–147.12 GHz*,
150–151 GHz*,

US370 The band 5000–5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, ITU Radio Regulation No. 5.444A and Resolution 114 (WRC–95) apply.

US371 In the bands 134–142 GHz and 190–191.8 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.

US372 *Additional allocation:* the bands 140.69–140.98 GHz, 144.68–144.98 GHz, 145.45–145.75 GHz, 146.82–147.12 GHz, 250–251 GHz and 262.24–262.76 GHz are also allocated to the radio astronomy service on a primary basis.

US373 In the bands 116–134 GHz, 174.8–182 GHz and 185–190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see ITU Radio Regulation No. 5.43).

US374 In the band 126–134 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see ITU Radio Regulation No. 5.43).

additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band.

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United States (US) Footnotes

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US342 In making assignments to stations of other services to which the following bands:

174.42–175.02 GHz*,
177–177.4 GHz*,
178.2–178.6 GHz*,
181–181.46 GHz*,
186.2–186.6 GHz*,
250–251 GHz*,
257.5–258 GHz*,
261–265 GHz,
262.24–262.76 GHz*,
265–275 GHz,
265.64–266.16 GHz*,
267.34–267.86 GHz*,
271.74–272.26 GHz*

US375 The frequency band 275–400 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

—Radio astronomy service: 278–280

GHz and 343–348 GHz;

—Earth exploration-satellite service (passive) and space research service (passive): 275–277 GHz, 300–302 GHz, 324–326 GHz, 345–347 GHz, 363–365 GHz and 379–381 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the next competent world radiocommunication conference.

US376 In the bands 95–100 GHz, 134–142 GHz, 190–200 GHz and 252–265 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).

US377 In the band 84–86 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of the

appropriate frequency assignment
planning conference for the
broadcasting-satellite service.

Non-Federal Government (NG)
Footnotes

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NG143 In the band 11.7–12.2 GHz,
protection from harmful interference
shall be afforded to transmissions from
space stations not in conformance with
ITU Radio Regulation 5.488 only if the
operations of such space stations

impose no unacceptable constraints on
operations or orbit locations of space
stations in conformance with 5.488.

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