

# FEDERAL COMMUNICATIONS COMMISSION

## 47 CFR Parts 2, 25 and 87

[ET Docket No. 02-305; FCC 02-261]

## World Radiocommunication Conferences Concerning Frequency Bands Above 28 MHz

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule.

**SUMMARY:** In this document the Commission proposes to amend our rules in order to implement domestically various allocation decisions from several World Radiocommunication Conferences ("WRCs") concerning the frequency bands between 28 MHz and 36 GHz and to otherwise update our rules in this frequency range. The following proposals are the most significant to non-Federal Government operations: implementing generic mobile-satellite service ("MSS") allocations in the bands 1525-1559 MHz and 1626.5-1660.5 MHz ("L-band"); allocating the band 1164-1189 MHz to the radionavigation-satellite service ("RNSS"); and removing unused and limited fixed-satellite and broadcasting-satellite allocations from the band 2500-2690 MHz. In addition, at the request of the National Telecommunications and Information Administration ("NTIA"), the Commission has proposed various allocation changes for the space science services and the inter-satellite service ("ISS"), most of which involve spectrum primarily used by the Federal Government. These proposals would conform the Commission's rules to previous WRC agreements and are expected to provide significant benefits to the American public.

**DATES:** Written comments are due February 10, 2003, and reply comments are due March 10, 2003.

**FOR FURTHER INFORMATION CONTACT:** Tom Mooring, Office of Engineering and Technology, (202) 418-2450, TTY (202) 418-2989, e-mail: [tmoothing@fcc.gov](mailto:tmoothing@fcc.gov).

**ADDRESSES:** Federal Communications Commission, 445 12th Street, SW., TW-A325, Washington, DC 20554.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's *Notice of Proposed Rulemaking*, ET Docket 02-305, FCC 02-261, adopted September 18, 2002, and released October 7, 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: [www.fcc.gov](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.

Pursuant to §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments on or before February 10, 2003, and reply comments on or before March 10, 2003. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies. See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998), 63 FR 24121, May 1, 1998. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should include the following words in the body of the message, "get form <your e-mail address>." A sample form and directions will be sent in reply. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number.

All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistrionix, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE., Suite 110, Washington, DC 20002.

The filing hours at this location are 8 a.m. to 7 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW., Washington, DC 20554.

## Summary of Notice of Proposed Rule Making

1. The *Notice of Proposed Rulemaking* ("NPRM") proposes to provide for generic MSS allocations across the bands 1525-1559 MHz and 1626.5-1660.5 MHz. Specifically, we proposed to expand the primary allocation in the bands 1545-1549.5 MHz, 1558.5-1559 MHz, 1646.5-1651 MHz, and 1660-1660.5 MHz from the aeronautical mobile-satellite (route) service ("AMS(R)S") to all services within the MSS while preserving the requirements of AMS(R)S. The effect of our proposal is that the bands 1545-1559 MHz and 1646.5-1660.5 MHz would be made available to all types of MSS communications on a primary basis, rather than segmented for specialized use. This action will permit more efficient use of this radio spectrum and will facilitate the expansion of MSS use globally. In addition, because the bands 1530-1544 MHz and 1626.5-1645.5 MHz are currently allocated to the maritime mobile-satellite service ("MMSS") and the MSS on a co-primary basis, we proposed to remove superfluous MMSS allocations. We are also requesting comment on whether the secondary allocation for aeronautical telemetry should be removed from the band 1525-1535 MHz.

2. The Commission proposes to allocate the band 1164-1189 MHz to the RNSS for space-to-Earth ("downlink") and space-to-space transmissions in order to accommodate a new civil global positioning system ("GPS") signal. This action would permit the addition of a new GPS signal and support the safety-of-life requirements demanded by civil aviation. We also proposed to allocate the bands 1215-1240 MHz and 1559-1610 MHz, which are currently limited to RNSS downlinks, for RNSS space-to-space transmissions as well. This action would allow use of spaceborne RNSS receivers for scientific and commercial applications.

3. The Commission proposes to downgrade the primary flight test and radiolocation allocations to secondary status in the band 2320-2345 MHz

because the Satellite Digital Audio Radio Service ("Satellite DARS") has been brought into operation. We also propose to delete limited allocations for the fixed-satellite service ("FSS") and the broadcasting-satellite service ("BSS") from the band 2500–2690 MHz in order to remove allocations that are not compatible with two-way, point-to-multipoint fixed uses.

4. The Commission proposes to implement domestically various allocation decisions concerning the space science services and the ISS from several WRCs that have not previously been addressed by the Commission. These proposals deal with the following issues:

- Raising secondary allocations for the Earth exploration-satellite service ("EESS") and the space research service ("SRS") to primary status in 1035 megahertz of spectrum in eight frequency bands and to specify that these allocations are to be used for active sensor operations ("EESS (active)" and "SRS (active)"): 1215–1240 MHz, 1240–1300 MHz, 5250–5255 MHz, 5255–5350 MHz, 8550–8650 MHz, 9500–9800 MHz, 13.4–13.75 GHz, and 17.2–17.3 GHz.

- Allocating 550 megahertz of additional spectrum to the EESS (active) and SRS (active) on a primary basis in the bands 13.25–13.4 GHz and 35.6–36 GHz. We would also change the primary footnote allocation for active spaceborne sensors in the band 35.5–35.6 GHz to a direct Table listing.

- Allocating 110 megahertz of additional spectrum to the EESS (active) on a primary basis in the band 5350–5460 MHz.

- Upgrading the allocation status of EESS uplinks and meteorological-satellite service ("METSAT") uplinks in the band 401–403 MHz from secondary to primary.

- Allocating the band 410–420 MHz to the SRS on a primary basis for space-to-space transmissions.

- Allocating the band 7750–7850 MHz for METSAT downlinks on a primary basis, limited to non-geostationary satellite systems.

- Allocating the band 8400–8450 MHz for SRS downlinks from deep space on a secondary basis.

- Allocating the band 25.25–27.5 GHz to the ISS on a primary basis.

- Raising the secondary EESS allocation to primary status in the band 25.5–27 GHz and changing its directional indicator from space-to-space to space-to-Earth.

5. In addition, we proposed to: (1) Remove the primary ISS allocation from the band 32–32.3 GHz; (2) remove the secondary allocation for the aeronautical mobile-satellite (route)

service ("AMS(R)S") from the band 136–137 MHz; (3) more than double the size of the geographic area in New Mexico and Texas where amateur stations in the band 420–450 MHz would be limited in power and where spread spectrum radiolocation systems in the sub-band 420–435 MHz should not expect to be accommodated; (4) reflect NTIA's recent action, which specified that Federal Government wind profiler radar systems ("wind profilers") will operate in the sub-band 448–450 MHz; (5) permit U.S. flagged ships to use more spectrum-efficient equipment for on-board mobile radiotelephony communications in areas outside the territorial waters of the United States; (6) remove unused allocations for the International Fixed Public Radiocommunication Services from the bands 2.1–2.2 GHz and 10.7–11.7 GHz; and (7) allocate the band 14–14.5 GHz to the mobile-satellite (Earth-to-space) except aeronautical mobile-satellite service on a secondary basis. The Commission also proposes to make numerous ministerial amendments to part 2 of our rules.

#### Initial Regulatory Flexibility Certification

6. The Regulatory Flexibility Act of 1980, as amended ("RFA"),<sup>1</sup> requires that an initial regulatory analysis be prepared for notice-and-comment rule making proceedings, unless the agency certifies that the "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."<sup>2</sup> The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."<sup>3</sup> In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.<sup>4</sup> A "small business concern" is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration ("SBA").<sup>5</sup>

<sup>1</sup> See U.S.C. 603. The RFA, see 5 U.S.C. 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. 104–121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> 5 U.S.C. 605(b).

<sup>3</sup> 5 U.S.C. 601(6).

<sup>4</sup> 5 U.S.C. 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. 632). Pursuant to 5 U.S.C. 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of

7. The *Notice of Proposed Rule Making* ("NPRM") proposed to amend parts 2, 25, and 87 of the Commission's rules in order to implement domestically various allocation decisions from several World Radiocommunication Conferences concerning the frequency bands between 28 MHz and 36 GHz and to otherwise update our rules in this frequency range. These allocation proposals mainly affect Federal agencies.<sup>6</sup> Those proposals that are most significant to non-Federal Government operations are: (1) Implementing generic L-band MSS allocations; (2) allocating the band 1164–1189 MHz to the RNSS; and (3) removing unused and limited FSS and BSS allocations from the band 2500–2690 MHz. Concerning L-band MSS, currently there is only one U.S. licensee. Concerning the RNSS allocation, only one or at most a few large companies are expected to be able to launch and maintain RNSS systems, which are expensive. The last proposal merely deletes unused allocations, with no direct effect on licensees or regulatees.

8. We have determined that the rules proposed in the NPRM will not, if promulgated, have a significant economic impact on a substantial number of small entities. Accordingly, we hereby certify that this NPRM will not have a significant economic impact on a substantial number of small entities. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this NPRM, including this certification, to the Chief Counsel for Advocacy of the Small Business Administration.<sup>7</sup>

9. Pursuant to sections 1, 4, 301, 302(a), 303, 307, 309, 316, 332, 334, and 336 of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154, 301, 302(a), 303, 307, 309, 316, 332, 334, and 336, the notice of proposed rule making is adopted.

#### List of Subjects

##### 47 CFR Part 2

Communications equipment, Radio.

##### 47 CFR Part 25

Communications equipment.

##### 47 CFR Part 87

Air transportation, Communications equipment.

such term which are appropriate to the activities of the agency and publishes such definition(s) in the *Federal Register*."

<sup>5</sup> 15 U.S.C. 632.

<sup>6</sup> See paras. 5–6, *supra*.

<sup>7</sup> 5 U.S.C. 605(b).

Federal Communications Commission.  
**William F. Caton,**  
*Deputy Secretary.*

**Proposed Rules**

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 2, 25, and 87 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 2.1 is revised by adding the following definitions in alphabetic order:

- § 2.1 Terms and definitions.**  
  
\* \* \* \* \*  
*Differential Global Positioning System (DGPS) Station.* A differential RNSS station for specific augmentation of GPS.  
*Differential Radionavigation Satellite Service (Differential RNSS) Station.* A station used for the transmission of differential correction data and related information (such as ionospheric data and RNSS satellite integrity information) as an augmentation to an RNSS system for the purpose of improved navigation accuracy.  
  
\* \* \* \* \*  
3. Section 2.106, the Table of Frequency Allocations, is amended as follows:  
a. Revise pages 22–75.  
b. In the list of International Footnotes under heading II., remove footnotes 591,

- 599A, 599B, 608A, 608B, 647B, 669, and 792A.  
c. In the list of United States (US) Footnotes, revise US7, US48, US110, US217, US244, US246, US262, US276, US277, US278, US310, US316, US320, US328, and US342; remove US10, US54, US228, US269, US318, and US322; and add footnotes USxxx, USyyy, and USzzz.  
d. In the list of Non-Federal Government (NG) Footnotes, remove NG23, NG47, NG63, NG101, and NG102; and revise NG41.  
e. In the list of Federal Government (G) Footnotes, revise footnote G2 and add footnote G129.

- § 2.106 Table of Frequency Allocations.**  
The revisions and additions read as follows:  
  
\* \* \* \* \*  
**BILLING CODE 6712–01–P**

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	Amateur (97)	
				US340		
				29.7-29.8 LAND MOBILE	Private Land Mobile (90)	
29.7-30.005 FIXED MOBILE				US340		
				29.8-29.89 FIXED		
				US340		
30.005-30.01 SPACE OPERATION (satellite identification) FIXED MOBILE			29.89-29.91 FIXED MOBILE	29.89-29.91		
			US340	US340		
			29.91-30	29.91-30 FIXED		
30.01-37.5 FIXED MOBILE			US340	US340		
			30-30.56 FIXED MOBILE	30-30.56		
			30.56-32	30.56-32 FIXED LAND MOBILE	Private Land Mobile (90)	
				NG124		
			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					
37.5-38.25 FIXED MOBILE Radio astronomy			33-34	33-34 FIXED LAND MOBILE NG124	Private Land Mobile (90)
			34-35 FIXED MOBILE	34-35	
			35-36	35-36 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
			36-37 FIXED MOBILE US220	36-37	
			37-37.5	US220 37-37.5 LAND MOBILE NG124	Private Land Mobile (90)
			37.5-38 Radio astronomy	37.5-38 LAND MOBILE Radio astronomy US342 NG59 NG124	
			38-38.25 FIXED MOBILE RADIO ASTRONOMY	38-38.25 RADIO ASTRONOMY	
			US81 US342	US81 US342	
			38.25-39 FIXED MOBILE	38.25-39	
			39-40	39-40 LAND MOBILE NG124 40-40.98	Private Land Mobile (90)
5.149					
38.25-39.986					
FIXED					
MOBILE					
39.986-40.02					
FIXED					
MOBILE					
Space research					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 41.015-44 FIXED MOBILE					
			5.150 US210 US220 42-46.6	US220 42-43.69 FIXED LAND MOBILE NG124 NG141 43.69-46.6 LAND MOBILE NG124 NG141 46.6-47	Public Mobile (22) Private Land Mobile (90)  Private Land Mobile (90)
5.160 5.161 44-47 FIXED MOBILE				46.6-47 FIXED MOBILE 47-49.6 LAND MOBILE NG124 49.6-50 FIXED MOBILE	Private Land Mobile (90)
5.162 5.162A 47-68 BROADCASTING		47-50 FIXED MOBILE BROADCASTING			
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

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			72-73 FIXED MOBILE	Public Mobile (22) Aviation (87) Private Land Mobile (90) Personal Radio (95)	
	73-74.6 RADIO ASTRONOMY			NG3 NG49 NG56		
5.149 5.174 5.175 5.177 5.179			73-74.6 RADIO ASTRONOMY US74			
	5.178		US246			
	74.6-74.8 FIXED MOBILE		74.6-74.8 FIXED MOBILE		Aviation (87) 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			

5.175 5.179 5.184 5.187 87.5-100 BROADCASTING	75.4-76 FIXED MOBILE	75.4-87 FIXED MOBILE	75.4-88 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	76-88 BROADCASTING	Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)
	5.185 88-100 BROADCASTING		NG128 NG129 NG149	
	5.190 100-108 BROADCASTING		88-108 BROADCASTING	Broadcast Radio (FM) (73) Auxiliary Broadcasting (74)
5.192 5.194 108-117.975 AERONAUTICAL RADIONAVIGATION			US93 108-117.975 AERONAUTICAL RADIONAVIGATION	Aviation (87)
5.197 117.975-137 AERONAUTICAL MOBILE (R)			US93 US343 117.975-121.9375 AERONAUTICAL MOBILE (R)	
			5.111 5.198 5.199 5.200 US26 US28 121.9375-123.0875 AERONAUTICAL MOBILE	
			5.198 US30 US31 US33 US80 US102 US213 123.0875-123.5875 AERONAUTICAL MOBILE	
5.111 5.198 5.199 5.200 5.201 5.202 5.203 5.203A 5.203B			5.198 5.200 US32 US33 US112 See next page for 123.5875-137 MHz	See next page for 123.5875-137 MHz



123.5875-148 MHz (VHF)					Page 27	
International Table			United States Table			
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	FCC Rule Part(s)	
See previous page for 117.975-137 MHz			123.5875-128.8125 AERONAUTICAL MOBILE (R)		Aviation (87)	
			5.198 US26			
			128.8125-132.0125	128.8125-132.0125 AERONAUTICAL MOBILE (R)		
			5.198	5.198		
			132.0125-136.00 AERONAUTICAL MOBILE (R)		Satellite Communications (25)	
			5.198 US26			
			136-137	136-137 AERONAUTICAL MOBILE (R)		
			US244	US244		
137-137.025 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R)			137-137.025 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US319 US320 SPACE RESEARCH (space-to-Earth)			
			5.208			
			137.025-137.175 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)			
			5.208			
5.204 5.205 5.206 5.207 5.208 137.025-137.175 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)			137.025-137.175 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) US319 US320			
			5.208			
			137.175-137.825 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed			
			137.175-137.825 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed			

Mobile except aeronautical mobile (R)	5.204 5.205 5.206 5.207 5.208	137.825-138 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)	138-143.6 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	138-143.6 FIXED MOBILE Space research (space-to-Earth)	5.204 5.205 5.206 5.207 5.208	5.208 137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) US319 US320
5.204 5.205 5.206 5.207 5.208	138-143.6 AERONAUTICAL MOBILE (OR)	138-143.6 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	138-143.6 FIXED MOBILE Space research (space-to-Earth)	138-144 FIXED MOBILE	5.208	138-144 FIXED MOBILE
5.204 5.205 5.206 5.207 5.208	143.6-143.65 AERONAUTICAL MOBILE (OR)	143.6-143.65 FIXED MOBILE RADIOLOCATION SPACE RESEARCH (space-to-Earth)	143.6-143.65 FIXED MOBILE SPACE RESEARCH (space-to-Earth)	143.65-144 FIXED MOBILE Space research (space-to-Earth)	5.207 5.213	143.65-144 FIXED MOBILE Space research (space-to-Earth)
5.204 5.205 5.206 5.207 5.208	143.65-144 AERONAUTICAL MOBILE (OR)	143.65-144 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	143.65-144 FIXED MOBILE Space research (space-to-Earth)	144-146 AMATEUR AMATEUR-SATELLITE	5.207 5.213	144-146 AMATEUR AMATEUR-SATELLITE
5.204 5.205 5.206 5.207 5.208	146-148 FIXED MOBILE except aeronautical mobile (R)	146-148 AMATEUR	146-148 AMATEUR FIXED MOBILE	146-148 AMATEUR	5.217	146-148 AMATEUR

148-162.0125 MHz (VHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2					
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) US319 US320 US323 US325	148-149.9 MOBILE-SATELLITE (Earth-to-space) US319 US320 US323 US325	Satellite Communications (25)
5.218 5.219 5.221	5.218 5.219 5.221			5.218 5.219 G30	5.218 5.219	
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) US319 US320 RADIONAVIGATION-SATELLITE		
5.220 5.222 5.223				5.223		
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 NG112	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
				US216	US216 NG4 NG51 NG124	
				152.855-154	152.855-154 LAND MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)
					NG4 NG124	
				154-156.2475	154-156.2475 FIXED LAND MOBILE NG112	Maritime (80) Private Land Mobile (90) Personal Radio (95)
				5.226	5.226 NG117 NG124 NG148	
5.226 5.227	5.225 5.226 5.227			156.2475-157.0375	156.2475-157.0375 MARITIME MOBILE	Aviation (87)

156.7625-156.8375 MARITIME MOBILE (distress and calling)					
5.111 5.226	156.8375-174 FIXED MOBILE except aeronautical mobile	156.8375-174 FIXED MOBILE	5.226 5.227 US77 US106 US107 US266	5.226 5.227 US77 US106 US107 US266 NG117	Private Land Mobile (90)
			157.0375-157.1875 MARITIME MOBILE	157.0375-157.1875	
			5.226 US214 US266 G109 157.1875-157.45	5.226 US214 US266 157.1875-157.45 LAND MOBILE MARITIME MOBILE	Private Land Mobile (90)
			5.226 US223 US266 157.45-161.575	5.226 US223 US266 NG111 157.45-161.575 FIXED LAND MOBILE	Maritime (80) Private Land Mobile (90)
			5.226 US266	5.226 US266 NG6 NG28 NG70 NG111 NG112 NG124 NG148 NG155	Public Mobile (22) Maritime (80) Private Land Mobile (90)
			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 5.229	5.226 5.230 5.231 5.232		5.226 US266	5.226 US266 NG6	See next page for 162.0125-174 MHz
			See next page for 162.0125-174 MHz		

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							
174-223 BROADCASTING	174-216 BROADCASTING Fixed Mobile	174-223 FIXED MOBILE BROADCASTING	174-216 FIXED MOBILE G5	162.0125-173.2 FIXED US13 MOBILE	162.0125-173.2	Auxiliary Broadcasting (74) Private Land Mobile (90)	
	5.234			5.226 US8 US11 US216 US223 US300 US312 G5	5.226 US8 US11 US13 US216 US223 US300 US312		
	216-220 FIXED MARITIME MOBILE Radiolocation 5.241			173.2-173.4	173.2-173.4 FIXED Land mobile	Private Land Mobile (90)	
	5.242			173.4-174 FIXED MOBILE	173.4-174		
	220-225 AMATEUR FIXED MOBILE Radiolocation 5.241						
5.235 5.237 5.243		5.233 5.238 5.240 5.245				Amateur (97)	

223-230 BROADCASTING Fixed Mobile	225-235 FIXED MOBILE	223-230 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation	225-235 FIXED MOBILE	225-235
5.243 5.246 5.247		5.250		
230-235 FIXED MOBILE		230-235 FIXED MOBILE AERONAUTICAL RADIONAVIGATION		
5.247 5.251 5.252		5.250		
235-267 FIXED MOBILE			G27	235-267
5.111 5.199 5.252 5.254 5.256				
267-272 FIXED MOBILE				
Space operation (space-to-Earth)				
5.254 5.257				
273-273				
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				
315-322				
FIXED				
MOBILE				
5.254				
			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	
322-328.6 FIXED MOBILE RADIO ASTRONOMY			322-328.6 FIXED MOBILE	322-328.6	
5.149			US342 G27	US342	
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 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260			399.9-400.05 MOBILE-SATELLITE (Earth-to-space) US319 US320 RADIONAVIGATION-SATELLITE 5.260		
5.220					
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) US70 METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US319 US320 US324	400.15-401 METEOROLOGICAL AIDS (radiosonde) US70 MOBILE-SATELLITE (space-to-Earth) US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263	Satellite Communications (25)

5.262 5.264	SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth)	Space operation (space-to-Earth)	
401-402	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	5.264 401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) EARTH EXPLORATION- SATELLITE (Earth-to- space) METEOROLOGICAL-SAT- ELLITE (Earth-to-space) USxxx	5.264 401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) USxxx
402-403	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	402-403 METEOROLOGICAL AIDS (radiosonde) US70 EARTH EXPLORATION- SATELLITE (Earth-to- space) METEOROLOGICAL-SAT- ELLITE (Earth-to-space) US345 USxxx	402-403 METEOROLOGICAL AIDS (radiosonde) US70 Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US345 USxxx
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 US13 MOBILE RADIO ASTRONOMY US74	406.1-410 RADIO ASTRONOMY US74
5.149		US117 G5 G6	US13 US117



410-470 MHz (UHF)				Page 35	
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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 US13 MOBILE SPACE RESEARCH (space-to-space) 5.268  G5	410-420	Private Land Mobile (90)
420-430 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271			420-450 RADIOLOCATION US217 US228 G2 G129	US13  420-450 Amateur US7 NG135	Private Land Mobile (90) Amateur (97)
430-440 AMATEUR RADIOLOCATION 5.138 5.271 5.272 5.273 5.274 5.275 5.276 5.277 5.280 5.281 5.282 5.283	430-440 RADIOLOCATION Amateur	5.271 5.276 5.277 5.278 5.279 5.281 5.282			
440-450 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286			5.286 US7 US87 US230 G8	5.282 5.286 US87 US217 US228 US230	Auxiliary Broadcasting (74) Private Land Mobile (90)
450-455 FIXED MOBILE			450-454  5.286 US87 454-456	450-454 LAND MOBILE  5.286 US87 NG112 NG124 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	455-456 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C	455-456 FIXED MOBILE		NG12 NG112 NG148 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 5.271 5.287 5.288	456-460 FIXED LAND MOBILE		456-460 FIXED LAND MOBILE	Public Mobile (22) Maritime (80) Private Land Mobile (90)
	5.287 5.288 NG112 NG124 NG148			
459-460 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	459-460 FIXED MOBILE		460-470 Meteorological-satellite (space-to-Earth)	Private Land Mobile (90)
	5.209 5.271 5.286A 5.286B 5.286C 5.286E			
460-470 FIXED MOBILE Meteorological-satellite (space-to-Earth)	460-470 FIXED LAND MOBILE		460-470 Meteorological-satellite (space-to-Earth)	Personal Radio (95)
	5.289 US201 US209 NG124 462.5375-462.7375 LAND MOBILE			
5.287 5.288 5.289 5.290	5.289 US201		462.7375-467.5375 FIXED LAND MOBILE	Private Land Mobile (90)
	5.287 5.289 US201 US209 US216 NG124			
5.287 5.288 5.289 5.290	467.5375-467.7375 LAND MOBILE		467.5375-467.7375 LAND MOBILE	Personal Radio (95)
	5.287 5.289 US201			
5.287 5.288 5.289 5.290	467.7375-470 FIXED LAND MOBILE		5.287 5.288 5.289 US201 US209 US216	Private Land Mobile (90)
	5.288 5.289 US201 US216 NG124			

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International Table			United States Table		FCC Rule Part(s)	
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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	5.291 5.298		512-608 BROADCASTING NG128 NG149	Broadcast Radio (TV) (73) Auxiliary Broadcasting (74)	
	5.297	585-610 FIXED MOBILE BROADCASTING RADIONAVIGATION				
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	5.149 5.305 5.306 5.307	608-614 RADIO ASTRONOMY US74 LAND MOBILE US350		Personal (95)	
614-806 BROADCASTING Fixed Mobile		610-890 FIXED	US246			
		MOBILE 5.317A BROADCASTING	614-890	614-698 BROADCASTING NG128 NG149	Broadcast Radio (TV) (73) Auxiliary Broadcast. (74)	
				698-746 BROADCASTING NG128 NG159 FIXED MOBILE	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcast. (74)	
				746-764 FIXED MOBILE BROADCASTING	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcasting (74) Private Land Mobile (90)	
				NG128 NG159		

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 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	5.317 5.318		776-794 FIXED MOBILE BROADCASTING	Wireless Communications (27) Broadcast Radio (TV) (73) Auxiliary Broadcast. (74) Private Land Mobile (90)
			NG128 NG159	
			794-806 FIXED MOBILE	Auxiliary Broadcasting (74) Private Land Mobile (90)
			NG128 NG158 NG159	
			806-821 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
			NG31	
			821-824 LAND MOBILE	Private Land Mobile (90)
			824-849 FIXED LAND MOBILE	Public Mobile (22)
			NG151	
			See next page for 849-894 MHz	See next page for 866-896 MHz

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International Table			United States Table		FCC Rule Part(s)	
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862-890 FIXED MOBILE except aeronautical mobile BROADCASTING 5.322	5.319 5.323	890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	890-902 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	849-851 AERONAUTICAL MOBILE	Public Mobile (22)	
				851-866 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)	
				NG31		
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	5.318 5.325	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	890-902	866-869 LAND MOBILE	Private Land Mobile (90)	
				869-894 FIXED LAND MOBILE	Public Mobile (22)	
				US116 US268 NG151		
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	5.318 5.325	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	890-902	894-896 AERONAUTICAL MOBILE		
				US116 US268		
				896-901 FIXED LAND MOBILE	Private Land Mobile (90)	
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	5.318 5.325	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	890-902	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 FIXED LAND MOBILE US116 US215 US268 G2 940-941 FIXED MOBILE 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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See previous page for 890-942 MHz	See previous page for 928-942 MHz	See previous page for 890-942 MHz	941-944 FIXED	941-944 FIXED	Public Mobile (22) Fixed Microwave (101)
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	US268 US301 US302 G2	US268 US301 US302 NG120	
5.323		5.320	944-960	944-960 FIXED NG120	Public Mobile (22) Auxiliary Broadcast. (74) Fixed Microwave (101)
960-1215 AERONAUTICAL RADIONAVIGATION 5.328			960-1215 AERONAUTICAL RADIONAVIGATION 5.328		Aviation (87)
5.328A			US224 USyyv		
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active)			1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active)	1215-1240 Earth exploration-satellite (active) Space research (active)	
5.330 5.331 5.332			5.332		
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 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 SPACE RESEARCH (active)	1240-1300 Earth exploration-satellite (active) Space research (active) Amateur	Amateur (97)
5.330 5.331 5.332 5.334 5.335					
1260-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur			5.332 5.334 5.335		5.282 5.334
5.282 5.330 5.331 5.334 5.335 5.335A					

1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 S5337A	1300-1350 AERONAUTICAL RADIO- NAVIGATION 5.337 Radiolocation G2 US342	1300-1350 AERONAUTICAL RADIO- NAVIGATION 5.337 US342	Aviation (87)
1350-1400 FIXED MOBILE RADIOLOCATION	1350-1390 FIXED MOBILE RADIOLOCATION G2 5.334 5.339 US311 US342 G27 G114 1390-1395	1350-1390  5.334 5.339 US311 US342 1390-1392 FIXED MOBILE except aeronautical mobile FIXED-SATELLITE (Earth-to-space) US368 5.339 US311 US342 US351 1392-1395 FIXED MOBILE except aeronautical mobile 5.339 US311 US342 US351	Wireless Communications (27)
5.149 5.338 5.339 1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	5.149 5.334 5.339  1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246	1395-1400 LAND MOBILE US350 5.339 US311 US342 US351  1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246	Personal (95)



1427-1610 MHz (UHF)				United States Table		FCC Rule Part(s)	Page 43
International Table		Region 3		Federal Government	Non-Federal Government		
Region 1	Region 2					Private Land Mobile (90) Personal (95)	
1427-1429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	1429-1452 FIXED MOBILE 5.343			1427-1429.5 LAND MOBILE US350	1427-1429.5 LAND MOBILE Fixed (telemetry)		
1429-1452 FIXED MOBILE except aeronautical mobile	1429-1452 FIXED MOBILE 5.343			5.341 US352 1429.5-1432	5.341 US350 US352 1429.5-1430 FIXED (telemetry) LAND MOBILE (telemetry)		
				5.341 US352	5.341 US350 US352		
				5.341 US350 US352	1430-1432 FIXED (telemetry) LAND MOBILE (telemetry) FIXED-SATELLITE (space-to-Earth) US368	Wireless Communications (27)	
				5.341 US350 US352	5.341 US350 US352		
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			1432-1435	1432-1435 FIXED MOBILE except aeronautical mobile	Aviation (87)	
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			5.341 US361	5.341 US361		
5.341 5.342	5.341 5.344 5.348			1435-1525 MOBILE (aeronautical telemetry)			
				5.341 US78			

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 5.342 5.350 5.351 5.352A 5.354	1525-1530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354	1525-1535 MOBILE-SATELLITE (space-to-Earth) US315 Mobile (aeronautical telemetry) US78	Satellite Communications (25) Maritime (80) Aviation (87)
1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space- to-Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354		5.341 5.351 1535-1559 MOBILE-SATELLITE (space-to-Earth) US308 US309	Satellite Communications (25) Maritime (80) Aviation (87)
1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.341 5.362B 5.362C 5.363	1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.341 5.351 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.341 US208 US260 US343		Aviation (87)

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International Table			United States Table			FCC Rule Part(s)	
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government			
1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)  5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space)  5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE(Earth-to-space)		Satellite Communications (25) Aviation (87)		
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 5.372 US208				
1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)  5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)  5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610.6-1613.8 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			5.341 5.364 5.366 5.367 5.368 5.372 US208 US342				
1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth)	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) Mobile-satellite (space-to- Earth)  5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to- Earth) Radiodetermination- satellite (Earth-to-space)  5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth)		5.341 5.364 5.365 5.366 5.367 5.368 5.372 US208		
5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372							

1626.5-1660 MOBILE-SATELLITE (Earth-to-space) 5.351A	1626.5-1660 MOBILE-SATELLITE (Earth-to-space) US308 US309 US315	Satellite Communications (25) Maritime (80) Aviation (87)
5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	5.341 5.351 5.375	
1660-1660.5 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY	1660-1660.5 MOBILE-SATELLITE (Earth-to-space) US308 US309 RADIO ASTRONOMY	Satellite Communications (25) Aviation (87)
5.149 5.341 5.351 5.354 5.362A 5.376A	5.341 5.351 US342	
1660.5-1668.4 RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile	1660.5-1668.4 RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	
5.149 5.341 5.379 5.379A	5.341 US246	
1668.4-1670 METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY	1668.4-1670 METEOROLOGICAL AIDS (radiosonde) RADIO ASTRONOMY US74	
5.149 5.341	5.341 US99 US342	

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
1670-1675 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 5.341			1670-1675 FIXED MOBILE except aeronautical mobile	1670-1675 FIXED MOBILE except aeronautical mobile	Wireless Communications (27)
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) 5.341 5.377	1675-1690 METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) MOBILE except aeronautical mobile	5.341 US211 US362 1675-1700 METEOROLOGICAL AIDS (radiosonde) METEOROLOGICAL-SATELLITE (space-to-Earth)	5.341 US211 US362	
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) 5.289 5.341 5.377 5.381	1690-1700 METEOROLOGICAL AIDS METEOROLOGICAL-SAT- ELLITE (space-to-Earth)	5.289 5.341 US211		
5.289 5.341 5.382	5.289 5.341 5.377 5.381	5.289 5.341 5.381			
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) 5.289 5.341 5.377	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 5.341 US311	1710-1755	

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	1850-2025		
1930-1970 FIXED MOBILE 5.388A			
5.388			
1970-1980 FIXED MOBILE 5.388A			
5.388			
1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F		1990-2025 MOBILE-SATELLITE (Earth-to-space)	Satellite Communications (25)
2010-2025 FIXED MOBILE 5.388A			
5.388			
2010-2025 FIXED MOBILE 5.388A			
5.388 5.389C 5.389D 5.389E 5.390			
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) 5.391 5.392 US90 US222 US346 US347	2025-2110 FIXED NG118 MOBILE 5.391	TV Auxiliary Broadcasting (74F) Cable TV Relay (78) Local TV Transmission (101J)
5.392		5.392 US90 US222 US346 US347	

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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 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	Domestic Public Fixed (21) Fixed Microwave (101)
2160-2170 FIXED MOBILE 5.388A	2160-2170 FIXED MOBILE 5.388A MOBILE-SATELLITE (space-to-Earth)	2160-2170 FIXED MOBILE 5.388A		2160-2165 FIXED 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				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			2290-2300 SPACE RESEARCH (deep space) (space-to-Earth)		
MOBILE except aeronautical mobile					
SPACE RESEARCH (deep space) (space-to-Earth)					
2300-2305			2300-2305 Amateur		Amateur (97) Note: 2300-2305 MHz became non-Federal Government exclusive spectrum in August 1995
G123					
2305-2310			2305-2310 FIXED MOBILE except aeronautical mobile RADIOLOCATION Amateur		Wireless Communications (27) Amateur (97)
US338 G123			US338		
2310-2345 Fixed			2310-2320 FIXED		Wireless Communications (27) Aviation (87)
Mobile US328 US339 Radiolocation G2 G120			MOBILE US339 RADIOLOCATION BROADCASTING- SATELLITE 5.396 US327		
			2320-2345 BROADCASTING- SATELLITE 5.396 US327		Satellite Communications (25) Aviation (87)
US327			US328		
See next page for 2345-2450 MHz					See next page for 2345-2450 MHz
5.150 5.282 5.395	5.150 5.282 5.393 5.394 5.396				



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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 2300-2450 MHz			2345-2360 Fixed Mobile US339 Radiolocation G2 G120 US327	2345-2360 FIXED MOBILE US339 RADIOLOCATION BROADCASTING- SATELLITE 5.396 US327	Wireless Communications (27) Aviation (87)
			2360-2385 MOBILE US276 RADIOLOCATION G2 G120 Fixed	2360-2385 MOBILE US276	Aviation (87)
			2385-2390	2385-2390 FIXED MOBILE NG174	Wireless Communications (27)
			US363	US363	
			2390-2400 G122	2390-2400 AMATEUR	RF Devices (15) Amateur (97)
			2400-2402	2400-2402 Amateur	ISM Equipment (18) Amateur (97)
			5.150 G123	5.150 5.282	
			2402-2417	2402-2417 AMATEUR	RF Devices (15) ISM Equipment (18) Amateur (97)
			5.150 G122	5.150 5.282	
			2417-2450 Radiolocation G2	2417-2450 Amateur	ISM Equipment (18) Amateur (97)
			5.150 G124	5.150 5.282	
			2450-2483.5	2450-2483.5 FIXED MOBILE Radiolocation	ISM Equipment (18) Private Land Mobile (90) Fixed Microwave (101)
2450-2483.5 FIXED MOBILE Radiolocation	2450-2483.5 FIXED MOBILE RADIOLOCATION	5.150 5.394	5.150 US41	5.150 US41	

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 RADIO DETERMINATION- 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 RADIO DETERMINATION- SATELLITE (space-to- Earth) 5.398	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 RADIO DETERMINATION- 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 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space- to-Earth) 5.403 5.351A 5.405 5.407 5.412 5.414	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) 5.403 5.351A 5.404 5.407 5.414 5.415A		2500-2655	2500-2655 FIXED US205 MOBILE except aeronautical mobile	Domestic Public Fixed (21) Auxiliary Broadcasting (74)
2520-2655 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING- SATELLITE 5.413 5.416	2520-2655 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					FCC Rule Part(s)	
Region 1	Region 2	Region 3	United States Table			
			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) 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 MOBILE except aeronautical mobile 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) Earth exploration-satellite (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) 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) Earth exploration-satellite (passive) Radio astronomy Space research (passive)	US205 US269	US269		
5.149 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 RADIONAVIGATION 5.426 Radiolocation	2900-3100 MARITIME RADIONAVIGATION Radiolocation US44 5.427 US316	2900-3100 MARITIME RADIONAVIGATION Radiolocation US44 5.427 US316	Maritime (80) Private Land Mobile (90)
5.425 5.427	3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active)	3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) US342	Private Land Mobile (90)
5.149 5.428	3300-3400 RADIOLOCATION Amateur Fixed Mobile 5.149 5.430 5.149 5.429 5.430	3300-3400 RADIOLOCATION Amateur US108 G31	Private Land Mobile (90) Amateur (97)
5.149 5.429 5.430	3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation	3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation 5.433 5.282 5.432	
5.431	3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433 5.435	Private Land Mobile (90)
		3500-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433 5.435	
		3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 MOBILE except aeronautical mobile NG170 US245 US348 US349	
		US245 US348 US349 See next page for 3700-4200 MHz	See next page for 3700-4200 MHz

3700-5650 MHz (SHF)				Page 55	
International Table			United States Table		FCC Rule Part(s)
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)
5.437 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 US245	4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.442 Radio astronomy			4800-4940 FIXED MOBILE	4800-4940	
			US203 US342	US203 US342	
			4940-4990	4940-4990 FIXED MOBILE except aeronautical mobile	Private Land Mobile (90) Fixed Microwave (101)
5.149 5.339 5.443			5.339 US311 US342 G122	5.339 US311 US342	
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive)			4990-5000 RADIO ASTRONOMY US74 Space research (passive)		
5.149			US246		
5000-5150 AERONAUTICAL RADIONAVIGATION			5000-5250 AERONAUTICAL RADIO- NAVIGATION US260	5000-5150 AERONAUTICAL RADIO- NAVIGATION US260 5.367 5.444A US211 US344 US370	Satellite Communications (25) Aviation (87)
5.367 5.443A 5.443B 5.444 5.444A					

5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A	5.367 US211 US307 US344 US370	5150-5250 AERONAUTICAL RADIO- NAVIGATION US260 FIXED-SATELLITE (Earth- to-space) 5.447A US344	
5.446 5.447 5.447B 5.447C	5250-5255 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D	5.447C US211 US307	
5.448 5.448A	5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	5250-5255 Earth exploration-satellite (active) Radiolocation Space research	
5.448 5.448A	5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	5255-5350 Earth exploration-satellite (active) Radiolocation Space research (active)	
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation	5350-5460 EARTH EXPLORATION- SATELLITE (active) 5.448B AERONAUTICAL RADIO- NAVIGATION 5.449 RADIOLOCATION G56	5350-5460 AERONAUTICAL RADIO- NAVIGATION 5.449 Earth exploration-satellite (active) Radiolocation	Aviation (87)
5460-5470 RADIONAVIGATION 5.449 Radiolocation	5460-5470 RADIONAVIGATION 5.449 Radiolocation G56	5460-5470 RADIONAVIGATION 5.449 Radiolocation	
5470-5650 MARITIME RADIONAVIGATION Radiolocation	US49 US65 5470-5600 MARITIME RADIONAVIGATION Radiolocation G56 US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51 G56 5.452 US65	US49 US65 5470-5600 MARITIME RADIONAVIGATION Radiolocation US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51	Maritime (80)
5.450 5.451 5.452		5.452 US65	

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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	5830-5850 RADIOLOCATION Amateur			5830-5850 Amateur	
Amateur-satellite (space-to-Earth)	Amateur-satellite (space-to-Earth)			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	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		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)	International Fixed (23) 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) 5.458 US342	6525-6700 FIXED FIXED-SATELLITE (Earth-to-space) 5.458 US342	Satellite Communications (25) Fixed Microwave (101)
	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	7125-7190 FIXED	
	5.458 US252 G116	5.458 US252	
	7190-7235 FIXED SPACE RESEARCH (Earth-to-space)	7190-7250	
	5.458		
	7235-7250 FIXED		
5.458 5.459 5.460	5.458	5.458	



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 7750-7850 FIXED METEOROLOGICAL-SAT- ELLITE (space-to-Earth) 5.461B		
7850-7900 FIXED MOBILE except aeronautical mobile				7850-7900 FIXED		

7900-8025 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	7900-8025 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Fixed		
5.461	G117		
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)	8025-8215	
5.462A	US258 G117		
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	
5.462A	US258 G104 G117		

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 8400-8450 Space research (space-to-Earth) (deep space only)	
5.467 8500-8550 RADIOLOCATION			8450-8500 FIXED SPACE RESEARCH (space-to-Earth)	8450-8500 SPACE RESEARCH (space-to-Earth)	
5.468 5.469 8550-8650 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)			8500-8550 RADIOLOCATION G59	8500-8550 Radiolocation	
5.468 5.469 5.469A 8650-8750 RADIOLOCATION			8550-8650 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active)	8550-8650 Earth exploration-satellite (active) Radiolocation Space research (active)	
5.468 5.469 8750-8850 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470			8650-9000 RADIOLOCATION G59	8650-9000 Radiolocation	
5.471					

8850-9000 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	US53 9000-9200 AERONAUTICAL RADIO- NAVIGATION 5.337 Radiolocation G2 US48 G19 9200-9300 MARITIME RADIO- NAVIGATION 5.472 Radiolocation US110 G59 5.474	US53 9000-9200 AERONAUTICAL RADIO- NAVIGATION 5.337 Radiolocation US48 9200-9300 MARITIME RADIO- NAVIGATION 5.472 Radiolocation US110 5.474	Aviation (87)
5.471 9200-9300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	US48 G19 9200-9300 MARITIME RADIO- NAVIGATION 5.472 Radiolocation US110 G59 5.474	US48 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 G56 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	9500-9800 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	9500-9800 Earth exploration- satellite (active) Radiolocation Space research (active)	
9800-10000 RADIOLOCATION Fixed 5.477 5.478 5.479	9800-10000 RADIOLOCATION 5.479	9800-10000 Radiolocation 5.479	

10-12.7 GHz (SHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2	10-10.45 FIXED MOBILE RADIOLOCATION Amateur		10-10.45 RADIOLOCATION	10-10.45 Radio location 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 Radio location 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)	
5.149 5.482				US265 US277	US265 US277	
10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)				10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340 5.483				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 FIXED-SATELLITE (space-to-Earth) 5.441 5.484A 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 FIXED-SATELLITE (space-to-Earth) 5.441 5.484A MOBILE except aeronautical mobile	Satellite Communications (25) Fixed Microwave (101)
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE	11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE	11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE	11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE	11.7-12.5 FIXED MOBILE except aeronautical mobile 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 12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)	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 12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)	5.487 5.487A 5.492 12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space)	Satellite Communications (25) Fixed Microwave (101)
5.494 5.495 5.496	5.494 5.495 5.496	5.494 5.495 5.496	5.494 5.495 5.496	5.494 5.495 5.496	See next page for 12.7-12.75 GHz

12.7-14.5 GHz (SHF)					Page 65	
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	12.7-12.75 FIXED NG118 FIXED-SATELLITE (Earth-to-space) MOBILE NG53	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	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)			US251 13.25-13.4 EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIO-NAVIGATION 5.497 SPACE RESEARCH (active)	US251 NG53 13.25-13.4 AERONAUTICAL RADIO-NAVIGATION 5.497 Earth exploration-satellite (active) Space research (active)	Aviation (87)	
5.498A 5.499 13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space)			5.498A 13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space)	13.4-13.75 Earth exploration-satellite (active) Radiolocation Space research Standard frequency and time signal-satellite (Earth-to-space)	Private Land Mobile (90)	
5.499 5.500 5.501 5.501B 13.75-14 FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard frequency and time signal-satellite (Earth-to-space) Space research			5.501B 13.75-14 RADIOLOCATION G59 Standard frequency and time signal-satellite (Earth-to-space) Space research US337 5.503A US356 US357	13.75-14 FIXED-SATELLITE (Earth-to-space) US337 Radiolocation Standard frequency and time signal-satellite (Earth-to-space) Space research 5.503A US356 US357	Satellite Communications (25) Private Land Mobile (90)	

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 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite	Satellite Communications (25) Maritime (80) Aviation (87)
5.505	14.2-14.4	14.2-14.4 FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite 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	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite 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-satellite Radionavigation-satellite	
5.505 5.508 5.509	14.4-14.47	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)	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) Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite	
5.149	US203 US342	US203 US342	Page 66



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 US310	14.7145-15.1365	
			15.1365-15.35 FIXED Mobile Space research 5.339 US211	15.1365-15.35	
5.339 15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511			15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246	5.339 US211	
15.4-15.43 AERONAUTICAL RADIONAVIGATION 5.511D			15.4-15.43 AERONAUTICAL RADIONAVIGATION US260 US211		Aviation (87)
15.43-15.63 FIXED SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION			15.43-15.63 AERONAUTICAL RADIO- NAVIGATION US260 5.511C US211 US359	15.43-15.63 FIXED SATELLITE (Earth-to-space) AERONAUTICAL RADIO- NAVIGATION US260 5.511C US211 US359	Satellite Communications (25) Aviation (87)
5.511C 15.63-15.7 AERONAUTICAL RADIONAVIGATION 5.511D			15.63-15.7 AERONAUTICAL RADIONAVIGATION US260 US211		Aviation (87)
15.7-16.6 RADIOLOCATION 5.512 5.513			15.7-16.6 RADIOLOCATION G59	15.7-17.2 Radiolocation	Private Land Mobile (90)

16.6-17.1 RADIOLOCATION Space research ( deep space) (Earth-to-space) 5.512 5.513		16.6-17.1 RADIOLOCATION G59 Space research (deep space) (Earth-to-space)		
17.1-17.2 RADIOLOCATION 5.512 5.513		17.1-17.2 RADIOLOCATION G59		
17.2-17.3 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A		17.2-17.3 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active)		17.2-17.3 Radiolocation Earth exploration-satellite (active) Space research (active)
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514		17.3-17.7 Radiolocation US259 G59		17.3-17.7 FIXED-SATELLITE (Earth-to-space) US271 BROADCASTING-SATELLITE NG163 NG167 US259
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE		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 NG144
18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.520 MOBILE 5.519 5.521		17.8-18.3 FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz		17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 NG144 See next page for 18.3-18.58 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED-SATELLITE (space-to-Earth) G117 5.519 US334 See next page for 18.3-18.6 GHz
				17.8-18.3 FIXED FIXED

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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 18.1-18.4 GHz			18.3-18.6 FIXED-SATELLITE (space-to-Earth) G117	18.3-18.56 FIXED FIXED-SATELLITE (space- to-Earth) NG164	Satellite Communications (25) Auxiliary Broadcast. (74) Cable TV Relay (78) Fixed Microwave (101)	
18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE			US334	US334 NG144 18.58-18.6 FIXED-SATELLITE (space- to-Earth) NG164	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 (space-to-Earth) US255 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 18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE	5.222A	5.522A 5.522C	US254 US334	US254 US334 NG144 18.8-19.3 FIXED-SATELLITE (space-to-Earth) NG165		
19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-space) 5.523B 5.523C 5.523D 5.523E MOBILE			18.8-20.2 FIXED-SATELLITE (space-to-Earth) G117	US334 NG144 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) 5.524	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A Mobile-satellite (space-to-Earth) 5.524		US334 NG144 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	Satellite Communications (25)	

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) 5.525 5.526 5.527 5.528 US334	
5.524 5.525 5.526 5.527 5.528		
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) G117	20.2-21.2 Standard frequency and time signal-satellite (space-to-Earth)
5.524		
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) US263	Fixed Microwave (101)
21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.530	21.4-22 FIXED MOBILE	
21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.530	21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.530 5.531	
22-22.21 FIXED MOBILE except aeronautical mobile 5.149	22-22.21 FIXED MOBILE except aeronautical mobile US342	
22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) US342 US263	

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22.5-22.55 FIXED MOBILE			22.5-22.55 FIXED MOBILE		Fixed Microwave (101)	
22.55-23.55 FIXED INTER-SATELLITE MOBILE			US211 22.55-23.55 FIXED INTER-SATELLITE US278 MOBILE		Satellite Communications (25) Fixed Microwave (101)	
5.149			US342			
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	24-24.05 AMATEUR AMATEUR-SATELLITE	ISM Equipment (18) Amateur (97)	
5.150			5.150 US211	5.150 US211		
24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active)			24.05-24.25 RADIOLOCATION G59 Earth exploration-satellite (active)	24.05-24.25 Radiolocation 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	24.25-24.45 RADIO NAVIGATION FIXED 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-SATELLITE (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)
	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	24.75-25.25 RADIONAVIGATION	Satellite Communications (25) Aviation (87)
	5.534	5.534	5.534	
25.5-27 FIXED INTER-SATELLITE 5.536 MOBILE 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 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 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)	Satellite Communications (25) Fixed Microwave (101)
	27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE	27-27.5 FIXED INTER-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE	27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE	

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International Table			United States Table	
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			27.5-30	27.5-29.5 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
5.538 5.540				
28.5-29.1 FIXED				
FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 MOBILE				
Earth exploration-satellite (Earth-to-space) 5.541				
5.540				
29.1-29.5 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				
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space)	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space)		29.5-29.9 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)
5.540 5.542	5.525 5.526 5.527 5.529 5.540 5.542	5.540 5.542		5.525 5.526 5.527 5.529
29.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543			29.9-30 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)	29.9-30 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)
5.525 5.526 5.527 5.538 5.540 5.542				5.525 5.526 5.527 5.543

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<p>30-31 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth)</p>	<p>30-31 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth)</p>	<p>30-31 Standard frequency and time signal-satellite (space-to-Earth)</p>
<p>5.542 31-31.3 FIXED 5.543A MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545</p>	<p>G117 31-31.3 Standard frequency and time signal-satellite (space-to-Earth)</p>	<p>31-31.3 FIXED MOBILE Standard frequency and time signal-satellite (space-to-Earth)</p>
<p>5.149 31.3-31.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p>	<p>US211 US342 31.3-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)</p>	<p>US211 US342</p>
<p>5.340 31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile</p>	<p>31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile</p>	<p>31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile</p>
<p>5.149 5.546 31.8-32 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)</p>	<p>US246 31.8-32 RADIONAVIGATION US69 SPACE RESEARCH (deep space) (space-to-Earth) US262</p>	<p>31.8-32 SPACE RESEARCH (deep space) (space-to-Earth) US262</p>
<p>5.547 5.547B 5.548</p>	<p>5.548 US211 USzzz</p>	<p>5.548 US211 USzzz</p>



32-40 GHz (EHF)				United States Table		FCC Rule Part(s)
International Table		Region 3		Federal Government	Non-Federal Government	
Region 1	Region 2					
32-32.3 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548				32-32.3 RADIONAVIGATION US69 SPACE RESEARCH (deep space) (space-to-Earth) US262 USzzz	32-32.3 SPACE RESEARCH (deep space) (space-to-Earth) US262 USzzz	
32-3-33 FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548				32-3-33 INTER-SATELLITE US278 RADIONAVIGATION US69 USzzz		Aviation (87)
33-33.4 FIXED 5.547A RADIONAVIGATION 5.547 5.547E				33-33.4 RADIONAVIGATION US69 US360 G117		
33-4-34.2 RADIOLOCATION 5.549				33-4-34.2 RADIOLOCATION US360 G117	33-4-35.5 Radiolocation US360	Private Land Mobile (90)
34-2-34.7 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space)				34-2-34.7 RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) US262 US360 G34 G117	34-2-34.7 Radiolocation Space research (deep space) (Earth-to-space) US262 US360	
5.549 34-7-35.2 RADIOLOCATION Space research 5.550 5.549				34-7-35.5 RADIOLOCATION	34-7-35.5 Radiolocation	
35-2-35.5 METEOROLOGICAL AIDS RADIOLOCATION 5.549				US360 G117	US360	
35-5-36 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.551A				35-5-36 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) US360 G117	35-5-36 Earth exploration-satellite (active) Radiolocation Space research (active) US360	

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**United States (US) Footnotes**

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US7 In the band 420–450 MHz and within the following areas, the peak envelope power output of a transmitter employed in the amateur service shall not exceed 50 watts, unless expressly authorized by the Commission after mutual agreement, on a case-by-case basis, between the Federal Communications Commission Engineer in Charge at the applicable district office and the military area frequency coordinator at the applicable military base. For areas (e) through (j), the appropriate military coordinator is located at Peterson AFB, CO.

(a) The entire State of New Mexico and Texas west of longitude 104°00' West;

(b) The entire State of Florida including the Key West area and the areas enclosed within a 322-kilometer (200-mile) radius of Patrick Air Force Base, Florida (latitude 28°21' North, longitude 80°43' West), and within a 322-kilometer (200-mile) radius of Eglin Air Force Base, Florida (latitude 30°30' North, longitude 86°30' West);

(c) The entire State of Arizona;

(d) Those portions of California and Nevada south of latitude 37°10' North, and the areas enclosed within a 322-kilometer (200-mile) radius of the Pacific Missile Test Center, Point Mugu, California (latitude 34°09' North, longitude 119°11' West).

(e) In the State of Massachusetts within a 160-kilometer (100-mile) radius around locations at Otis Air Force Base, Massachusetts (latitude 41°45' North, longitude 70°32' West).

(f) In the State of California within a 240-kilometer (150-mile) radius around locations at Beale Air Force Base, California (latitude 39°08' North, longitude 121°26' West).

(g) In the State of Alaska within a 160-kilometer (100-mile) radius of Clear, Alaska (latitude 64°17' North, longitude 149°10' West).

(h) In the State of North Dakota within a 160-kilometer (100-mile) radius of Concrete, North Dakota (latitude 48°43' North, longitude 97°54' West).

(i) In the States of Alabama, Georgia and South Carolina within a 200-kilometer (124-mile) radius of Warner Robins Air Force Base, Georgia (latitude 32°38' North, longitude 83°35' West).

(j) In the State of Texas within a 200-kilometer (124-mile) radius of Goodfellow Air Force Base, Texas (latitude 31°25' North, longitude 100°24' West).

\* \* \* \* \*

US48 In the band 9000–9200 MHz, the use of the radiolocation service by non-Federal Government licensees may be authorized on the condition that harmful interference is not caused to the aeronautical radionavigation service or to the Federal Government radiolocation service.

\* \* \* \* \*

US110 In the band 9200–9300 MHz, the use of the radiolocation service by non-Federal Government licensees may be authorized on the condition that harmful interference is not caused to the maritime radionavigation service or to the Federal Government radiolocation service.

\* \* \* \* \*

US217 In the band 420–450 MHz, pulse-ranging radiolocation systems may be authorized for Federal and non-Federal Government use along the shorelines of the contiguous 48 States and Alaska. In the sub-band 420–435 MHz, spread spectrum radiolocation systems may be authorized for Federal and non-Federal Government use within the contiguous 48 States and Alaska. All stations operating in accordance with this provision shall be secondary to stations operating in accordance with the Table of Frequency Allocations. Authorizations shall be granted on a case-by-case basis; however, operations proposed to be located within the following geographic areas should not expect to be accommodated:

(a) The entire State of New Mexico and Texas west of longitude 104°00' West;

(b) The entire State of Florida including the Key West area and the areas enclosed within a 322-kilometer (200-mile) radius of Patrick Air Force Base, Florida (latitude 28°21' North, longitude 80°43' West), and within a 322-kilometer (200-mile) radius of Eglin Air Force Base, Florida (latitude 30°30' North, longitude 86°30' West);

(c) The entire State of Arizona;

(d) Those portions of California and Nevada south of latitude 37°10' North, and the areas enclosed within a 322-kilometer (200-mile) radius of the Pacific Missile Test Center, Point Mugu, California (latitude 34°09' North, longitude 119°11' West).

(e) In the State of Massachusetts within a 160-kilometer (100-mile) radius around locations at Otis Air Force Base, Massachusetts (latitude 41°45' North, longitude 70°32' West).

(f) In the State of California within a 240-kilometer (150-mile) radius around locations at Beale Air Force Base, California (latitude 39°08' North, longitude 121°26' West).

(g) In the State of Alaska within a 160-kilometer (100-mile) radius of Clear,

Alaska (latitude 64°17' North, longitude 149°10' West).

(h) In the State of North Dakota within a 160-kilometer (100-mile) radius of Concrete, North Dakota (latitude 48°43' North, longitude 97°54' West).

(i) In the States of Alabama, Georgia and South Carolina within a 200-kilometer (124-mile) radius of Warner Robins Air Force Base, Georgia (latitude 32°38' North, longitude 83°35' West).

(j) In the State of Texas within a 200-kilometer (124-mile) radius of Goodfellow Air Force Base, Texas (latitude 31°25' North, longitude 100°24' West).

All stations operating in accordance with this provision will be secondary to stations operating in accordance with the Table of Frequency Allocations.

\* \* \* \* \*

US244 The band 136–137 MHz is allocated to the non-Federal Government aeronautical mobile (R) service on a primary basis, and is subject to pertinent international treaties and agreements. The frequencies 136, 136.025, 136.05, 136.075, 136.1, 136.125, 136.15, 136.175, 136.2, 136.225, 136.25, 136.275, 136.3, 136.325, 136.35, 136.375, 136.4, 136.425, 136.45, and 136.475 MHz are available on a shared basis to the Federal Aviation Administration for air traffic control purposes, such as automatic weather observation stations (AWOS), automatic terminal information services (ATIS), flight information services-broadcast (FIS-B), and airport control tower communications.

\* \* \* \* \*

US246 No station shall be authorized to transmit in the following bands: 73–74.6 MHz, 608–614 MHz, except for medical telemetry equipment<sup>1</sup>, 1400–1427 MHz, 1660.5–1668.4 MHz, 2690–2700 MHz, 4990–5000 MHz, 10.68–10.7 GHz, 15.35–15.4 GHz, 23.6–24 GHz, 31.3–31.8 GHz, 50.2–50.4 GHz, 52.6–54.25 GHz, 86–92 GHz, 100–102 GHz, 105–116 GHz, 164–168 GHz, 182–185 GHz, 217–231 GHz.

\* \* \* \* \*

US262 The use of the band 31.8–32.3 GHz by the space research service (deep space) (space-to-Earth) and of the band 34.2–34.7 GHz by the space research service (deep space) (Earth-to-space) are limited to Goldstone, California.

\* \* \* \* \*

US276 Except as otherwise provided for herein, use of the band 2360–2385

<sup>1</sup> Medical telemetry equipment shall not cause harmful interference to radio astronomy operations in the band 608–614 MHz and shall be coordinated under the requirements found in 47 CFR 95.1119.

MHz by the mobile service is limited to aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof. The following three frequencies are shared on a co-equal basis by Government and non-Government stations for telemetering and associated telecommand operations of expendable and reusable launch vehicles whether or not such operations involve flight testing: 2364.5 MHz, 2370.5 MHz, and 2382.5 MHz. All other mobile telemetering uses shall be secondary to the above uses.

US277 The band 10.6–10.68 GHz is also allocated on a primary basis to the radio astronomy service. However, the radio astronomy service shall not receive protection from stations in the fixed service which are licensed to operate in the one hundred most populous urbanized areas as defined by the 1990 U.S. Census.

US278 In the bands 22.55–23.55 GHz and 32.3–33 GHz, non-geostationary inter-satellite links may operate on a secondary basis to geostationary inter-satellite links.

US310 In the band 14.896–15.121 GHz, non-Federal Government space stations in the space research service may be authorized on a secondary basis to transmit to Tracking and Data Relay Satellites subject to such conditions as may be applied on a case-by-case basis. Such transmissions shall not cause harmful interference to authorized Federal Government stations. The power flux-density produced by such non-Federal Government stations at the Earth's surface in any 4 kHz band for all conditions and methods of modulation shall not exceed:

- 148 dB(W/m<sup>2</sup>) for  $0^\circ < * \leq 5^\circ$
- $148 + (* - 5)/2$  dB(W/m<sup>2</sup>) for  $5^\circ < * \leq 25^\circ$
- 138 dB(W/m<sup>2</sup>) for  $25^\circ < * \leq 90^\circ$

where \* is the angle of arrival of the radio-frequency wave (degrees above the horizontal). These limits relate to the power flux-density and angles of arrival which would be obtained under free-space propagation conditions.

US316 The band 2900–3000 MHz is also allocated on a primary basis to the meteorological aids service. Operations in this service are limited to Federal Government Next Generation Weather Radar (NEXRAD) systems where accommodation in the 2700–2900 MHz band is not technically practical and are subject to coordination with existing authorized stations.

US320 The use of the bands 137–138 MHz, 148–150.05 MHz, and 400.15–401 MHz by the mobile-satellite service is limited to non-voice, non-geostationary satellite systems and may include satellite links between land earth stations at fixed locations.

US328 The band 2320–2345 MHz is also available for aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof on a secondary basis to the Satellite Digital Audio Radio Service.

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

13360–13410 kHz,  
37.5–38.25 MHz,  
322–328.6 MHz,  
1330–1400 MHz,  
1610.6–1613.8 MHz,  
1660–1660.5 MHz,  
1668.4–1670 MHz,  
3260–3267 MHz,  
3332–3339 MHz,  
3345.8–3352.5 MHz,  
4825–4835 MHz,  
4950–4990 MHz,  
6650–6675.2 MHz,  
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,  
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,  
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

are allocated, all practicable steps shall be taken 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 of the ITU Radio Regulations).

USxxx In the band 401–403 MHz, the non-Federal Government Earth exploration-satellite (Earth-to-space) and meteorological-satellite (Earth-to-space) services are limited to earth stations transmitting to Federal Government space stations.

USyyy The band 1164–1189 MHz is also allocated to the radionavigation-satellite service (space-to-Earth, space-to-space) on a primary basis. In this band, stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical radionavigation service.

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

#### Non-Federal Government (NG) Footnotes

NG41 Frequencies in the bands 3700–4200 MHz and 5925–6425 MHz, may also be assigned to stations in the international fixed public and international control services located in Puerto Rico, the U.S. Virgin Islands, and Navassa Island.

#### Federal Government (G) Footnotes

G2 In the bands 216–225, 420–450 (except as provided by US217 and G129) 890–902, 928–942, 1300–1400, 2310–2385, 2417–2450, 2700–2900, 5650–5925 and 9000–9200 MHz, the Government radiolocation service is limited to the military services.

G129 Government wind profilers are authorized to operate on a primary basis in the radiolocation service in the frequency band 448–450 MHz with an authorized bandwidth of no more than 2 MHz centered on 449 MHz, subject to the following conditions: (1) Wind profiler locations must be pre-coordinated with the military services to protect fixed military radars; and (2) wind profiler operations shall not cause harmful interference to, nor claim protection from, military mobile radiolocation stations that are engaged in critical national defense operations.

**PART 25—SATELLITE COMMUNICATIONS**

4. The authority citation for part 25 continues to read as follows:

**Authority:** 47 U.S.C. 701–744. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 303, 307, 309 and 332, unless otherwise noted.

5. Section 25.202 is amended by revising paragraph (a)(3) and adding paragraph (a)(4)(iii) to read as follows:

**§ 25.202 Frequencies, frequency tolerance and emission limitations.**

(a)(1) \* \* \*

\* \* \* \* \*

(3) The following frequencies are available for use by the non-voice, non-geostationary mobile-satellite service:

137–138 MHz: space-to-Earth

148–150.05 MHz: Earth-to-space

399.9–400.05 MHz: Earth-to-space

400.15–401 MHz: space-to-Earth

(4) \* \* \*

(iii) The following frequencies are available for use by the L-band Mobile-Satellite Service:

1525–1559 MHz: space-to-Earth

1626.5–1660.5 MHz: Earth-to-space

The use of the frequencies 1544–1545 MHz and 1645.5–1646.5 MHz is limited to distress and safety communications.

\* \* \* \* \*

**PART 87—AVIATION SERVICES**

6. The authority citation for part 87 continues to read as follows:

**Authority:** 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, 307(e) unless otherwise noted. Interpret or apply 48 Stat. 1064–1068, 1081–1105, as amended; 47 U.S.C. 151–156, 301–609.

7. Section 87.303 is amended by revising paragraph (d)(1) to read as follows:

**§ 87.303 Frequencies.**

\* \* \* \* \*

(d)(1) Frequencies in the bands 1435–1525 MHz and 2360–2385 MHz are assigned primarily for telemetry and telecommand operations associated with the flight testing of manned or unmanned aircraft and missiles, or their major components. The bands 1525–1535 MHz and 2310–2360 MHz are also available for these purposes on a secondary basis. Until January 1, 2007,

flight test operations in the band 2385–2390 MHz may continue on a primary basis within 160 km of the nine sites listed in 47 CFR 2.106, footnote US363. Permissible uses of these bands include telemetry and telecommand transmissions associated with the launching and reentry into the Earth's atmosphere, as well as any incidental orbiting prior to reentry, of manned or unmanned objects undergoing flight tests. In the band 1435–1530 MHz, the following frequencies are shared with flight telemetry mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, 1524.5, and 1525.5 MHz. In the band 2360–2390 MHz, the following frequencies may be assigned on a co-equal basis for telemetry and associated telecommand operations in fully operational or expendable and re-usable launch vehicles, whether or not such operations involve flight testing: 2364.5, 2370.5 and 2382.5 MHz. In the band 2360–2390 MHz, all other mobile telemetry uses are secondary to the above stated launch vehicle uses.

\* \* \* \* \*

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