

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, 15, 18, 27 and 95

[ET Docket No. 19–289; DA 19–1326; FRS 16510]

WRC–15 Order

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document makes non-substantive, editorial revisions to the Table of Frequency Allocations (Allocation Table) and to various other Commission rules. The purpose of this action is to update the International Table of Frequency Allocations (International Table) to reflect the decisions made at an international conference, to update the Federal Table of Frequency Allocations (Federal Table) within the Commission's rules in those frequency bands where such an action would have no substantive effect on non-Federal licensees, to remove outdated provisions from the Commission's rules, and to ensure that the Allocation Table and related rules are consistent with the Commission's decisions in recent rulemaking proceedings.

DATES: Effective July 27, 2020.

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SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *Order* in ET Docket No. 19–289, DA 19–1326, which was adopted and released on December 23, 2019. The full text of this document is available for inspection and copying during normal business hours in the FCC Reference Center (Room CY–A257), 445 12th Street SW, Washington, DC 20554. The full text may also be downloaded at: https://apps.fcc.gov/edocs_public/attachmatch/DA-19-1326A1.pdf. People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice), 202–418–0432 (TTY).

Synopsis

ORDER

1. By this action, the Commission amends parts 1, 2, 15, 18, 27, and 95 of its rules to make non-substantive, editorial revisions to the Allocation Table and to revise various other rules.

This action is not intended to modify or otherwise change any party's underlying rights and/or responsibilities. In particular, the Commission updates the International Table within the Allocation Table to reflect, for informational purposes only, the decisions made at the World Radiocommunication Conference 2015 (WRC–15). In addition, the Commission makes certain amendments to the Federal Table, for informational purposes only, based on the recommendations of the National Telecommunications and Information Administration (NTIA), which pertain solely to spectrum allocated exclusively for Federal use or where non-Federal use is limited to secondary services. WRC–15 implementation matters of a substantive nature will be addressed in a separate notice of proposed rulemaking.

DISCUSSION

A. Reflecting WRC–15 Revisions in the International Table

2. The Commission updates the International Table within section 2.106 of the rules to reflect Article 5, Section IV of the Radio Regulations (Edition of 2016), except where minor corrections or updates have been made. The International Table is included within the Commission's Allocation Table for informational purposes only.

B. Reflecting WRC–15 Revisions in the U.S. Table

References to International Footnotes in the U.S. Table

3. The United States Table of Frequency Allocations (U.S. Table) includes references to ten international footnotes (5.134, 5.223, 5.260, 5.268, 5.287, 5.327A, 5.443B, 5.396, 5.501A, and 5.511C), which WRC–15 revised or deleted. Because these footnotes are included in the U.S. Table, the Commission reviewed these footnotes and finds that the WRC–15 revisions will have no substantive effect on non-Federal operations. Specifically, the Commission:

- Removes the references to international footnotes 5.223 and 5.260 from the U.S. Table because WRC–15 removed these international footnotes and the underlying primary radionavigation-satellite service allocation from the 149.9–150.05 MHz and 399.9–400.05 MHz bands from the Radio Regulations, making the references to these international footnotes in the U.S. Table no longer necessary.

- Revises international footnotes 5.327A and 5.443B by updating the

cross references from Resolution 417 (Rev.WRC–12) and Resolution 741 (Rev.WRC–12), respectively, to the version of these resolutions that are currently shown in the Radio Regulations, *i.e.*, “(Rev.WRC–15).” As noted above, the Commission is also updating cross references to Resolution 517 (Rev.WRC–07) and Resolution 33 (Rev.WRC–03) contained in footnotes 5.134 and 5.396, respectively. WRC–15 made editorial changes to the text of these international footnotes can be used in the U.S. Table since the changes do not have a substantive impact on non-Federal operations.

- Revises international footnote 5.268 by removing the extra-vehicular activity (EVA) and five-kilometer restrictions from Federal space research service (SRS) operations in the 410–420 MHz band. Because non-Federal stations in the 410–420 MHz band don't have a co-primary status, they “cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date,” and thus, applying the text that WRC–15 adopted for footnote 5.268 is a non-substantive, editorial action.

- Updates the text of international footnote 5.287 to reflect the changes adopted by WRC–15, noting that this footnote was revised to specify the frequency bands that are available for on-board communication stations in the maritime mobile service and to state that the “characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU–R M.1174–3.” These changes increase the number of available frequencies from the existing ten to 34 and also could be misinterpreted as requiring the use of a channeling plan different from that currently used in U.S. territorial waters, which is shown in footnote US288. As a result, because footnote 5.287 appears in the 456–470 MHz range in the U.S. Table, the Commission moves the pre-WRC–15 text of footnote 5.287 into placeholder footnote US287 so that these changes to the international footnote can be considered by the Commission in its planned WRC–15 implementation notice of proposed rulemaking. Consequently, the Commission also amends the respective frequency bands in the U.S. Table by replacing the reference to footnote 5.287 with that of footnote US287.

Revisions to the Federal Table

4. In this section, the Commission addresses the modifications NTIA made to certain Federal allocations for

purposes of implementing the *WRC-15 Final Acts*, which were submitted to the Commission on September 10, 2018. In line with NTIA's changes, the Commission revises the Federal Table in its rules to reflect, for informational purposes only, changes to the following bands that are allocated exclusively for Federal use: 7190–7250 MHz, 7300–7750 MHz and 14.5–14.8 GHz; and the following bands with primary Federal allocations that contain only secondary non-Federal allocations: 1215–1240 MHz and 13.4–13.75 GHz. Specifically, the Commission:

- Adds to the Federal Table a primary allocation for the Earth exploration-satellite service (EESS) (Earth-to-space) in the 7190–7250 MHz band and two international footnotes (5.460A, 5.460B) that limit the use of this EESS uplink allocation. Footnote 5.460A limits the EESS uplink allocation to tracking, telemetry and command for the operation of spacecraft, and, *e.g.*, specifies that space stations operating under this allocation in the 7190–7250 MHz band may not claim protection from stations in the fixed and mobile services. Footnote 5.460B states that EESS geostationary satellites receiving in the 7190–7235 MHz band may not claim protection from existing and future stations of the space research service. The Commission also replaces footnote G133 with international footnote 5.460.

- Adds to the Federal Table a primary allocation for the maritime mobile-satellite service (MMSS) (space-to-Earth) in the 7375–7750 MHz bands and two international footnotes (5.461AA, 5.461AB) that limit the use of this MMSS downlink allocation. Footnote 5.461AA limits MMSS use of the band to geostationary-satellite orbit (GSO) networks and footnote 5.461AB specifies that MMSS earth stations receiving in the band may not claim protection from, nor constrain the use and development of, stations in the fixed and mobile, except aeronautical mobile, services. In addition, the Commission replaces the existing secondary mobile-satellite service (space-to-Earth) allocation entry in the 7375–7750 MHz band with a secondary mobile-satellite “except maritime mobile-satellite” service (space-to-Earth) allocation entry, and in the 7375–7450 MHz band, the Commission also adds a primary mobile except aeronautical mobile service allocation.

- Adds to the Federal Table international footnote 5.509G to the right of the existing secondary space research service (SRS) allocation entry in the 14.5–14.8 GHz band. Footnote 5.509G states that the 14.5–14.8 GHz

band is also allocated to SRS on a primary basis, limited to satellite systems operating in the Earth-to-space (uplink) direction to relay data to space stations in the geostationary-satellite orbit (GSO) from associated earth stations; that primary stations in the SRS may not cause harmful interference to, or claim protection from, stations operating under the fixed, mobile, and fixed-satellite services; and that other uses of this frequency band by the SRS are on a secondary basis.

- Updates footnote G132, which applies to the 1215–1240 MHz band, to cross reference the revised Resolution 608, replacing “(WRC-03)” with “(Rev.WRC-15).” WRC-15 revised Resolution 608 (WRC-03) by noting that Recommendation ITU-R M.1902 and Report ITU-R M.2284 apply to radionavigation-satellite service (space-to-Earth) use of the 1215–1300 MHz band.

- Subjects the use of the existing primary Federal space research service (SRS) allocation in the 13.4–13.75 GHz band to new international footnotes 5.499C and 5.499D as well as modified footnote 5.501A. Because footnote 5.501B limits the impact of the space research service (active) in the band on the radiolocation service and the only non-Federal licensee in the band is in the radiolocation service, the Commission finds that this action is non-substantial.

Other Revisions to the U.S. Table

5. The Commission makes the following non-substantive, editorial changes to the U.S. Table and to FCC Rule part cross references within section 2.106 of the rules:

- Update footnote NG159 to remove the reference to part 74, subpart E, because the aural broadcast auxiliary stations are no longer licensed to operate on frequencies in the 698–806 MHz band, which has been reallocated and licensed for mobile broadband use.

- Add footnote US84 to the 941–944 MHz band in the Federal Table, which was inadvertently omitted when the Commission revised footnote US84 by adding the 941.5–944 MHz band.

- Add footnote NG527A to the 10.7–11.7 GHz band, which was inadvertently omitted from the non-Federal Table of Frequency Allocations (non-Federal Table) when the footnote was adopted in the *ESIMs Report and Order and Further Notice of Proposed Rulemaking*.

- Delete the entries for EESS (passive), SRS (passive), and footnotes 5.562B, 5.562F, and 5.562G from the 155.5–158.5 GHz band. The transition period concluded in 2018, and these

two allocations and three footnotes are no longer needed.

- Update the contact information for the National Science Foundation in footnotes US99 and US385 and sections 27.1321(b) and 95.2309(f)(3) of the Commission's Rules.

- Revise the FCC Rule Part(s) column of the Allocation Table by adding a part 15 cross reference (*i.e.*, “RF Devices (15)”) to the 902–928 MHz, 2400–2483.5 MHz, 5850–5925 MHz, 28.35–29.1 GHz, and 84–86 GHz bands; by removing the part 15 cross reference from the 29.1–29.25 GHz and 45.5–46.9 GHz bands; and by adding a part 101 cross reference (*i.e.*, “Fixed Microwave (101)”) to the 84–86 GHz band.

C. Other Conforming Rule Revisions

6. The Commission makes the following non-substantive, editorial updates to the Commission's rules:

- Correct sections 1.1307(b)(2)(ii), 2.1091(c)(2), and 2.1093(c)(1) of the rules by revising the cross reference to section 15.255 from paragraph “(g)” to “(f).” This action reflects the paragraph re-designation adopted in the *Spectrum Frontiers 1st R&O*.

- Revise section 2.100 to note that the International Table has been updated to reflect the 2016 edition of the Radio Regulations.

- Revise section 2.101 to reflect Section I of Article 2 of the Radio Regulations. Specifically, the Commission deletes the column titled “Metric abbreviations for the bands” from the table in section 2.101, and also delete the duplicate table from that section.

- Revise sections 2.102 and 2.105 by replacing the archaic term “band(s) of frequencies” with “frequency band(s).”

- Revise section 2.104 to state that the international footnotes shown in the International Table are applicable only to the relationships between the United States and other countries (unless a reference to an international footnote has been added to the U.S. Table).

- Revise the text in section 2.105(d)(2) without changing its underlying meaning or implication. Also revise the factual description in section 2.105(e) of the informational cross references that appear in column 6 of the Table of Allocations set out in section 2.106. The revision would recognize that the column 6 cross references sometimes include a reference to an FCC Rule subpart instead of an FCC Rule part and that an FCC Rule part or subpart may apply to only a portion of a frequency band. Finally, the Commission adds the following clarifying note: The radio frequency devices authorized pursuant

to 47 CFR part 15 are not based on allocated radio services. In the Allocation Table, the cross references to part 15 are used to note those frequency bands that are most typically associated with unlicensed use.

- Revise section 2.107 to cross reference the international notification requirements of radio astronomy stations, specified in No. 11.12 of Article 11 and Annex 2 of Appendix 4 of the Radio Regulations.

- Correct a typographical error in the heading of section 15.510 to provide consistency with paragraphs (b) and (c).

- Revise section 18.301 by replacing “allocated” with “designated” in the second sentence, simplifying the display of three ISM frequencies (*i.e.*, remove unnecessary commas from 2,450 MHz and 5,800 MHz and change 24,125 MHz to 24.125 GHz) in the table, and by deleting the note below the table. The Commission takes these actions to make this rule more consistent with international footnote 5.150 and to remove an unneeded and outdated cross reference.

Paperwork Reduction Act Analysis

7. This document does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104–13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4).

Congressional Review Act

8. The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs that this rule is non-major under the Congressional Review Act, 5 U.S.C. 804(2). The Commission will send a copy of this Order to Congress and the Government Accountability Office pursuant to 5 U.S.C. 801(a)(1)(A).

Administrative Procedure Act Requirements

9. The Commission amends parts 1, 2, 15, 18, 27, and 95 of the Commission’s rules herein by incorporating non-substantive, editorial revisions only. Therefore, there is good cause for not employing the notice and comment procedure in this case. Specifically, the Commission finds that the normal procedures for notice and comment and for publication as required under section 553 of the Administrative Procedure Act would be impracticable, unnecessary, or contrary to the public interest. *See* 5 U.S.C. 553(b)(3)(B); *Kessler v. FCC*, 326 F.2d 673 (D.C. Cir. 1963).

Ordering Clause

10. *It is ordered* that parts 1, 2, 15, 18, 27, and 95 of the Commission’s rules, 47 CFR parts 1, 2, 15, 18, 27, and 95, *are amended* as set forth in the Appendix of the Order, effective 30 days after publication in the **Federal Register**. This action is taken pursuant to authority found in sections 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i) and 303, and in sections 0.11, 0.31, 0.231(b) and 0.241(i) of the Commission’s Rules, 47 CFR 0.11, 0.31, 0.231(b) and 0.241(i).

11. Petitions for reconsideration under 47 CFR 1.429 or applications for review by the Commission under 47 CFR 1.115 may be filed within 30 days after publication in the **Federal Register**. Should no petitions for reconsideration or applications for review be timely filed, this proceeding shall be terminated, and its docket closed.

List of Subjects in 47 CFR Part 1, 2, 15, 18, 27, and 95

Radio.

Federal Communications Commission.

Ronald Repasi,

Acting Chief, Office of Engineering and Technology.

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 1, 2, 15, 18, 27, and 95 as follows:

PART 1—PRACTICE AND PROCEDURE

■ 1. The authority citation for part 1 continues to read as follows:

Authority: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461 note, unless otherwise noted.

■ 2. Section 1.1307 is amended by revising paragraph (b)(2)(ii) to read as follows:

§ 1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

* * * * *

(b) * * *

(2) * * *

(ii) Unlicensed PCS, unlicensed NII, and millimeter-wave devices are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 15.255(f), 15.257(g), 15.319(i), and 15.407(f) of this chapter.

* * * * *

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

■ 3. The authority citation for part 2 continues to read as follows:

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

■ 4. Section 2.100 is revised to read as follows:

§ 2.100 International regulations in force.

The Radio Regulations of the International Telecommunication Union (Radio Regulations) (Edition of 2012) have been incorporated to the extent practicable in this part, except that the International Table within § 2.106 has been updated to reflect the Radio Regulations (Edition of 2016).

■ 5. Section 2.101 is amended by revising the table in paragraph (b) and by removing the table in paragraph (c).

The revision reads as follows:

§ 2.101 Frequency and wavelength bands.

* * * * *

(b) * * *

TABLE 1 TO PARAGRAPH (b)

Band No.	Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Corresponding metric subdivision
4	VLF	3 to 30 kHz	Myriametric waves.
5	LF	30 to 300 kHz	Kilometric waves.
6	MF	300 to 3 000 kHz	Hectometric waves.
7	HF	3 to 30 MHz	Decametric waves.
8	VHF	30 to 300 MHz	Metric waves.
9	UHF	300 to 3 000 MHz	Decimetric waves.
10	SHF	3 to 30 GHz	Centimetric waves.

TABLE 1 TO PARAGRAPH (b)—Continued

Band No.	Symbols	Frequency range (lower limit exclusive, upper limit inclusive)	Corresponding metric subdivision
11	EHF	30 to 300 GHz	Millimetric waves.
12		300 to 3 000 GHz	Decimillimetric waves.

Note 1: “Band N” (N = band number) extends from 0.3×10^N Hz to 3×10^N Hz.

Note 2: Prefix: k = kilo (10^3), M = mega (10^6), G = giga (10^9).

* * * * *

■ 6. Section 2.102 is amended by revising paragraph (a) to read as follows:

§ 2.102 Assignment of frequencies.

(a) Except as otherwise provided in this section, the assignment of frequencies and frequency bands to all stations and classes of stations and the licensing and authorizing of the use of all such frequencies between 8.3 kHz and 275 GHz, and the actual use of such frequencies for radiocommunication or for any other purpose, including the transfer of energy by radio, shall be in accordance with the Table of Frequency Allocations in § 2.106.

* * * * *

■ 7. Section 2.104 is amended by adding paragraph (h)(8) to read as follows:

§ 2.104 International Table of Frequency Allocations.

* * * * *

(h) * * *

(8) The international footnotes shown in the International Table are applicable only to the relationships between the United States and other countries (unless a reference to an international footnote has been added to the United States Table of Frequency Allocations).

* * * * *

■ 8. Section 2.105 is amended by revising paragraphs (d)(1) and (2) and (e) to read as follows:

§ 2.105 United States Table of Frequency Allocations.

* * * * *

(d) * * *

(1) The frequency band referred to in each allocation, column 4 for Federal operations and column 5 for non-Federal operations, is indicated in the left-hand top corner of the column. If there is no service or footnote indicated for a frequency band in column 4, then the Federal sector has no access to that band except as provided for by § 2.103. If there is no service or footnote indicated for a frequency band in column 5, then the non-Federal sector has no access to that band except as provided for by § 2.102.

(2) When the type of service(s) permitted and any applicable footnote(s) are the same for a frequency band in the Federal Table and the non-Federal Table, columns 4 and 5 are merged, indicating that the frequency band is shared between the Federal and non-Federal sectors under the same conditions.

* * * * *

(e) *Rule part cross-references.* If a frequency or frequency band has been allocated to a radiocommunication service in the non-Federal Table, then a cross reference may be added to the pertinent FCC Rule part (column 6 of § 2.106) or, where greater specificity would be useful, to the pertinent subpart. For example, the band 849–851 MHz is allocated to the aeronautical mobile service for non-Federal use, rules for the use of the 849–851 MHz band have been added to part 22—Public Mobile Services (47 CFR part 22), and a cross reference, Public Mobile (22), has been added in column 6 of § 2.106. The exact use that can be made of any given frequency or frequency band (e.g., channeling plans, allowable emissions, etc.) is given in the FCC Rule part(s) so indicated. The FCC Rule parts in this column are not allocations, may apply to only a portion of a band, and are provided for informational purposes only. This column also may contain explanatory notes for informational purposes only.

Note 1 to paragraph (e): The radio frequency devices authorized pursuant to 47 CFR part 15 are not based on allocated radio services. In the Allocation Table, the cross references to part 15 are used to note those frequency bands that are most typically associated with unlicensed use.

* * * * *

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

■ a. Revise pages 7 through 9, 19, 22 through 27, 29 through 34, and 38 through 68.

■ b. In the list of International Footnotes:

■ i. Revise footnotes 5.54B, 5.55, 5.68, 5.93, 5.96, 5.98, 5.102, 5.119, 5.122,

5.132B, 5.133A, 5.134, 5.140, 5.141B, 5.145B, 5.149A, 5.158, 5.159, 5.161B, 5.164, 5.167, 5.167A, 5.170, 5.172, 5.173, 5.185, 5.201, 5.202, 5.208B, 5.211, 5.220, 5.221, 5.256A, 5.268, 5.275, 5.276, 5.279A, 5.286AA, 5.287, 5.288, 5.291A, 5.292, 5.293, 5.294, 5.296, 5.297, 5.300, 5.309, 5.312, 5.312A, 5.313A, 5.316B, 5.317, 5.317A, 5.325A, 5.327A, 5.329, 5.338A, 5.342, 5.345, 5.351A, 5.352A, 5.359, 5.382, 5.384A, 5.386, 5.388, 5.391, 5.393, 5.396, 5.401, 5.418, 5.428, 5.429, 5.430, 5.430A, 5.431, 5.431A, 5.432B, 5.433A, 5.438, 5.442, 5.443B, 5.444, 5.444A, 5.444B, 5.446, 5.446C, 5.447E, 5.447F, 5.450A, 5.457A, 5.457B, 5.457C, 5.459, 5.460, 5.462A, 5.468, 5.471, 5.477, 5.480, 5.481, 5.486, 5.494, 5.495, 5.500, 5.504B, 5.504C, 5.505, 5.506B, 5.508A, 5.509A, 5.510, 5.511A, 5.511C, 5.512, 5.514, 5.521, 5.524, 5.530A, 5.530D, 5.536B, 5.543A, 5.551H, and 5.562D;

■ ii. Add footnotes 5.133B, 5.228AA, 5.265, 5.295, 5.296A, 5.308, 5.308A, 5.328AA, 5.341A, 5.341B, 5.341C, 5.346, 5.346A, 5.429A, 5.429B, 5.429C, 5.429D, 5.429E, 5.429F, 5.431B, 5.434, 5.436, 5.437, 5.441A, 5.441B, 5.460A, 5.460B, 5.461AA, 5.461AB, 5.474A, 5.474B, 5.474C, 5.474D, 5.499A, 5.499B, 5.499C, 5.499D, 5.499E, 5.501A, 5.509B, 5.509C, 5.509D, 5.509E, 5.509F, and 5.509G; and

■ iii. Remove footnotes 5.166, 5.222, 5.223, 5.224A, 5.224B, 5.232, 5.234, 5.260, 5.313B, 5.314, 5.315, 5.316, 5.316A, 5.362B, 5.362C, 5.417A, 5.417B, 5.417C, 5.417D, 5.456, 5.458C, 5.511D, and 5.530C.

■ c. In the list of United States (US) footnotes, revise footnote US99, add footnote US287, and revise footnote US385;

■ d. In the list of Non-Federal Government (NG) footnotes, revise footnote NG159; and

■ e. In the list of Federal Government (G) footnotes, revise footnote G132 and remove footnote G133.

The revisions and additions read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

Table of Frequency Allocations

3.23-5.73 MHz (HF)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
3.23-3.4 FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118			3.23-3.4 FIXED MOBILE except aeronautical mobile Radiolocation US340		Maritime (80) Aviation (87) Private Land Mobile (90)
3.4-3.5 AERONAUTICAL MOBILE (R)			3.4-3.5 AERONAUTICAL MOBILE (R) US283 US340		Aviation (87)
3.5-3.8 AMATEUR FIXED MOBILE except aeronautical mobile 5.92 3.8-3.9 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE 3.9-3.95 AERONAUTICAL MOBILE (OR) 5.123 3.95-4 FIXED	3.5-3.75 AMATEUR 5.119 3.75-4 AMATEUR FIXED MOBILE except aeronautical mobile (R)	3.5-3.9 AMATEUR FIXED MOBILE 3.9-3.95 AERONAUTICAL MOBILE BROADCASTING 3.95-4 FIXED	3.5-4 AMATEUR US340	3.5-4 AMATEUR US340	Amateur Radio (97)

BROADCASTING		BROADCASTING			
4-4.063		5.126		4-4.063	
FIXED				FIXED	Maritime (80)
MARITIME MOBILE 5.127				MARITIME MOBILE	
5.126				US340	
4.063-4.438				4.063-4.438	
MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132				MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 US82	Maritime (80)
5.128				US296 US340	Aviation (87)
4.438-4.488	4.438-4.488	4.438-4.488		4.438-4.488	
FIXED	FIXED	FIXED		FIXED	Maritime (80)
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile Radiolocation 5.132A		MOBILE except aeronautical mobile (R) RADIOLOCATION 5.132A	Private Land Mobile (90)
5.132B				US340	
4.488-4.65	4.488-4.65	4.488-4.65		4.488-4.65	
FIXED	FIXED	FIXED		FIXED	Maritime (80)
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile		MOBILE except aeronautical mobile (R) US22 US340	Aviation (87)
4.65-4.7				4.65-4.7	Private Land Mobile (90)
AERONAUTICAL MOBILE (R)				AERONAUTICAL MOBILE (R)	
				US282 US283 US340	Aviation (87)
4.7-4.75				4.7-4.75	
AERONAUTICAL MOBILE (OR)				AERONAUTICAL MOBILE (OR) US340	

4.75-4.85 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	4.75-4.85 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113	4.75-4.85 FIXED BROADCASTING 5.113 Land mobile	4.75-4.85 FIXED MOBILE except aeronautical mobile (R) US340	Maritime (80) Private Land Mobile (90)
4.85-4.995 FIXED LAND MOBILE BROADCASTING 5.113			4.85-4.995 FIXED MOBILE US340	Aviation (87) Private Land Mobile (90)
4.995-5.003 STANDARD FREQUENCY AND TIME SIGNAL (5 MHz) 5.003-5.005 STANDARD FREQUENCY AND TIME SIGNAL Space research			4.995-5.005 STANDARD FREQUENCY AND TIME SIGNAL (5 MHz) US1 US340	
5.005-5.06 FIXED BROADCASTING 5.113			5.005-5.06 FIXED US22 US340	Aviation (87) Private Land Mobile (90)
5.06-5.25 FIXED Mobile except aeronautical mobile 5.133			5.06-5.25 FIXED US22 Mobile except aeronautical mobile US212 US340	Maritime (80) Aviation (87) Private Land Mobile (90)
5.25-5.275 FIXED MOBILE except aeronautical mobile	5.25-5.275 FIXED MOBILE except aeronautical mobile	5.25-5.275 FIXED MOBILE except aeronautical mobile	5.25-5.275 FIXED MOBILE except aeronautical mobile	Maritime (80) Private Land Mobile (90)

Radiolocation 5.132A	RADIOLOCATION 5.132A	RADILOCATION 5.132A	
5.133A			US340
5.275-5.3515			5.275-5.45
FIXED			FIXED US22
MOBILE except aeronautical mobile			Mobile except aeronautical mobile
5.3515-5.3665			
FIXED			
MOBILE except aeronautical mobile			
Amateur 5.133B			
5.3665-5.45			
FIXED			
MOBILE except aeronautical mobile			US23 US340
5.45-5.48		5.45-5.48	5.45-5.68
FIXED		FIXED	AERONAUTICAL MOBILE (R)
AERONAUTICAL MOBILE (OR)		AERONAUTICAL MOBILE (OR)	
LAND MOBILE		LAND MOBILE	
5.48-5.68			
AERONAUTICAL MOBILE (R)			
5.111 5.115			5.111 5.115 US283 US340
5.68-5.73			5.68-5.73
AERONAUTICAL MOBILE (OR)			AERONAUTICAL MOBILE (OR)
5.111 5.115			5.111 5.115 US340

Table of Frequency Allocations					5.73-11.175 MHz (HF)		FCC Rule Part(s)	
International Table					United States Table			
Region 1 Table		Region 2 Table		Region 3 Table	Federal Table	Non-Federal Table		
5.73-5.9	5.73-5.9	5.73-5.9	5.73-5.9	5.73-5.9	5.73-5.9			
FIXED	FIXED	FIXED	FIXED	FIXED	FIXED			Maritime (80)
LAND MOBILE	MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)	Mobile except aeronautical mobile (R)	Mobile except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)			Aviation (87)
5.9-5.95					US340			Private Land Mobile (90)
BROADCASTING 5.134					5.9-6.2			
5.136					BROADCASTING 5.134			International Broadcast Stations (73F)
5.95-6.2								
BROADCASTING					US136 US340			
6.2-6.525					6.2-6.525			
MARITIME MOBILE 5.109 5.110 5.130 5.132					MARITIME MOBILE 5.109 5.110 5.130 5.132 US82			Maritime (80)
5.137					US296 US340			
6.525-6.685					6.525-6.685			
AERONAUTICAL MOBILE (R)					AERONAUTICAL MOBILE (R)			Aviation (87)
					US283 US340			
6.685-6.765					6.685-6.765			
AERONAUTICAL MOBILE (OR)					AERONAUTICAL MOBILE (OR)			
					US340			
6.765-7					6.765-7			
FIXED					FIXED US22			ISM Equipment (18)
MOBILE except aeronautical mobile (R)					MOBILE except aeronautical mobile (R)			Private Land Mobile (90)

5.138	5.138 US340		7-7.2	7-7.1	Amateur Radio (97)
7-7.1	7-7.1		AMATEUR	AMATEUR-SATELLITE	
AMATEUR	US340		7.1-7.2	AMATEUR	
AMATEUR-SATELLITE	US340		7.1-7.2	AMATEUR	
5.140 5.141 5.141A	US340		7.2-7.3	AMATEUR	
7.1-7.2	US340		7.2-7.3	AMATEUR	
AMATEUR 5.142	US340		7.2-7.3	AMATEUR	
5.141A 5.141B	US340		7.2-7.3	AMATEUR	
7.2-7.3	7.2-7.3	7.2-7.3	7.2-7.3	AMATEUR	
BROADCASTING	AMATEUR	BROADCASTING	AMATEUR	US142 US340	International Broadcast Stations (73F)
5.142	5.142	5.142	5.142	US142 US340	Amateur Radio (97)
7.3-7.4	7.3-7.4		BROADCASTING 5.134	US136 US340	International Broadcast Stations (73F)
BROADCASTING 5.134	BROADCASTING 5.134		US136 US340	MOBILE except aeronautical mobile (R)	Maritime (80)
5.143 5.143A 5.143B 5.143C 5.143D	5.143 5.143A 5.143B 5.143C 5.143D		7.4-7.45	FIXED	Private Land Mobile (90)
7.4-7.45	7.4-7.45	7.4-7.45	7.4-7.45	MOBILE except aeronautical mobile (R)	
BROADCASTING	FIXED	BROADCASTING	MOBILE except aeronautical mobile (R)	US142 US340	
5.143B 5.143C	5.143A 5.143C	5.143A 5.143C	5.143A 5.143C	US142 US340	
7.45-8.1	7.45-8.1		FIXED US22	MOBILE except aeronautical mobile (R)	Maritime (80)
FIXED	FIXED US22		MOBILE except aeronautical mobile (R)	US340	Aviation (87)
MOBILE except aeronautical mobile (R)	MOBILE except aeronautical mobile (R)		US340		Private Land Mobile (90)
5.144	5.144				

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Table of Frequency Allocations				41.015-117.975 MHz (VHF)	
International Table		United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table (See previous page)	Non-Federal Table	
40.98-41.015					
FIXED					
MOBILE					
Space research					
5.160 5.161					
41.015-42			41.015-41.665	41.015-41.665	
FIXED			FIXED	RADIOLOCATION US132A	Private Land Mobile (90)
MOBILE			MOBILE		
			RADIOLOCATION US132A		
			US220	US220	
			41.665-42	41.665-42	
			FIXED		
			MOBILE		
			US220	US220	
5.160 5.161 5.161A					
42-42.5	42-42.5		42-43.35	42-43.35	
FIXED	FIXED			FIXED	Public Mobile (22)
MOBILE	MOBILE			LAND MOBILE	Private Land Mobile (90)
Radiolocation 5.132A					
5.160 5.161B	5.161			NG124 NG141	
42.5-44			43.35-44	43.35-43.69	
FIXED			RADIOLOCATION US132A	FIXED	

MOBILE			LAND MOBILE RADIOLOCATION US132A NG124	
5.160 5.161 5.161A			43.69-44 LAND MOBILE RADIOLOCATION US132A NG124	Private Land Mobile (90)
			44-46.6 LAND MOBILE NG124 NG141	
			46.6-47 FIXED MOBILE	
5.162 5.162A			47-49.6 LAND MOBILE NG124	Private Land Mobile (90)
47-68 BROADCASTING			49.6-50 FIXED MOBILE	
	47-50 FIXED MOBILE	47-50 FIXED MOBILE BROADCASTING	50-54 AMATEUR	Amateur Radio (97)
	5.162A 5.167 5.167A 5.168 5.170			

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137.825-138			137.825-138		
SPACE OPERATION (space-to-Earth)			SPACE OPERATION (space-to-Earth)		
METEOROLOGICAL-SATELLITE (space-to-Earth)			METEOROLOGICAL-SATELLITE (space-to-Earth)		
SPACE RESEARCH (space-to-Earth)			SPACE RESEARCH (space-to-Earth)		
Fixed			Mobile-satellite (space-to-Earth) US319 US320		
Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209					
Mobile except aeronautical mobile (R)					
5.204 5.205 5.206 5.207 5.208			5.208		
138-143.6			138-144		
AERONAUTICAL MOBILE (OR)			FIXED		
5.210 5.211 5.212 5.214			MOBILE		
143.6-143.65			Space research (space-to-Earth)		
AERONAUTICAL MOBILE (OR)			5.207 5.213		
SPACE RESEARCH (space-to-Earth)			143.6-143.65		
5.211 5.212 5.214			FIXED		
143.65-144			MOBILE		
AERONAUTICAL MOBILE (OR)			RADIOLOCATION		
5.210 5.211 5.212 5.214			SPACE RESEARCH (space-to-Earth)		
144-146			5.207 5.213		
AMATEUR			143.65-144		
			FIXED		
			MOBILE		
			RADIOLOCATION		
			Space research (space-to-Earth)		
			5.207 5.213		
			G30		
			144-148		
			144-146		
			AMATEUR		
			Amateur Radio (97)		

AMATEUR-SATELLITE		AMATEUR-SATELLITE		Satellite Communications (25)
5.216				
146-148	146-148	146-148	146-148	146-148
FIXED	AMATEUR	AMATEUR	AMATEUR	AMATEUR
MOBILE except aeronautical mobile (R)		FIXED	FIXED	
		MOBILE	MOBILE	
	5.217		5.217	
148-149.9	148-149.9	148-149.9	148-149.9	148-149.9
FIXED	FIXED	FIXED	FIXED	MOBILE-SATELLITE
MOBILE except aeronautical mobile (R)	MOBILE	MOBILE	MOBILE	(Earth-to-space) US320
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	US323 US325
5.209				
5.218 5.219 5.221	5.218 5.219 5.221	5.218 5.219 5.221	5.218 5.219 5.221	5.218 5.219 5.221
149.9-150.05	149.9-150.05	149.9-150.05	149.9-150.05	149.9-150.05
MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220
				RADIONAVIGATION-SATELLITE
150.05-153	150.05-154	150.05-154	150.05-154	150.05-154
FIXED	FIXED	FIXED	FIXED	FIXED
MOBILE except aeronautical mobile	MOBILE	MOBILE	MOBILE	MOBILE
RADIO ASTRONOMY				
5.149	5.225			US73

Table of Frequency Allocations

150.8-174 MHz (VHF)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
(See previous page)	(See previous page)		150.8-152.855	150.8-152.855 FIXED LAND MOBILE NG4 NG51 NG112 US73 NG124	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids			152.855-156.2475	152.855-154 LAND MOBILE NG4 NG124	Remote Pickup (74D) Private Land Mobile (90)
154-156.4875 FIXED MOBILE except aeronautical mobile (R)	154-156.4875 FIXED MOBILE	154-156.4875 FIXED MOBILE	154-156.2475 FIXED LAND MOBILE NG112 5.226 NG22 NG124 NG148		Maritime (80) Private Land Mobile (90) Personal Radio (95)
5.225A 5.226	5.226	5.225A 5.226	156.2475-156.5125	156.2475-156.5125 MARITIME MOBILE NG22	Maritime (80) Aviation (87)
156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC)			5.226 US52 US227 US266 156.5125-156.5375 MARITIME MOBILE (distress, urgency, safety and calling via DSC)	5.226 US52 US227 US266 NG124	
5.111 5.226 5.227			5.111 5.226 US266 156.5375-156.7625 5.226 US52 US227 US266	156.5375-156.7625 MARITIME MOBILE	

156.5625-156.7625 FIXED MOBILE except aeronautical mobile (R)	156.5625-156.7625 FIXED MOBILE				
5.226	5.226			5.226 US52 US227 US266	
156.7625-156.7875 MARITIME MOBILE Mobile-satellite (Earth-to-space)	156.7625-156.7875 MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space)	156.7625-156.7875 MARITIME MOBILE Mobile-satellite (Earth-to-space)	156.7625-156.7875	MOBILE-SATELLITE (Earth-to-space) (AIS 3)	Satellite Communications (25) Maritime (80)
5.111 5.226 5.228	5.111 5.226 5.228	5.111 5.226 5.228	5.111 5.226 5.228	5.226 US52 US266	
156.7875-156.8125			156.7875-156.8125	MARITIME MOBILE (distress, urgency, safety and calling)	Maritime (80) Aviation (87)
5.111 5.226			5.111 5.226 US266		
156.8125-156.8375 MARITIME MOBILE Mobile-satellite (Earth-to-space)	156.8125-156.8375 MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space)	156.8125-156.8375 MARITIME MOBILE Mobile-satellite (Earth-to-space)	156.8125-156.8375	MOBILE-SATELLITE (Earth-to-space) (AIS 4)	Satellite Communications (25) Maritime (80)
5.111 5.226 5.228	5.111 5.226 5.228	5.111 5.226 5.228	5.111 5.226 5.228	5.226 US52 US266	
156.8375-161.9375 FIXED MOBILE except aeronautical mobile	156.8375-161.9375 FIXED MOBILE		156.8375-157.0375	156.8375-157.0375 MARITIME MOBILE 5.226 US52 US266	Maritime (80) Aviation (87)
			157.0375-157.1875 MARITIME MOBILE US214 5.226 US266 G109	157.0375-157.1875 5.226 US214 US266	Maritime (80)
			157.1875-161.575	157.1875-157.45 MOBILE except aeronautical mobile US266	Maritime (80) Aviation (87)

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5.228F	5.228C 5.228D	5.226	5.228C US52		
5.226 5.228A 5.228B	161.9875-162.0125	161.9875-162.0125	161.9875-162.0125	MOBILE except aeronautical mobile	Maritime (80)
FIXED	FIXED				
MOBILE except aeronautical mobile	MOBILE				
Maritime mobile-satellite (Earth-to-space) 5.228AA	Maritime mobile-satellite (Earth-to-space) 5.228AA				
5.226 5.229	5.226		5.226		
162.0125-162.0375	162.0125-162.0375	162.0125-162.0375	162.0125-162.0375		
FIXED	AERONAUTICAL MOBILE (OR)	MARITIME MOBILE	AERONAUTICAL MOBILE (OR) (AIS 2)		Satellite
MOBILE except aeronautical mobile	MARITIME MOBILE	Aeronautical mobile (OR) 5.228E	MARITIME MOBILE (AIS 2)		Communications (25)
Mobile-satellite (Earth-to-space) 5.228F	MOBILE-SATELLITE (Earth-to-space)	Mobile-satellite (Earth-to-space) 5.228F	MOBILE-SATELLITE (Earth-to-space) (AIS 2)		Maritime (80)
5.226 5.228A 5.228B 5.229	5.228C 5.228D	5.226	5.228C US52		
162.0375-174	162.0375-174		162.0375-173.2		
FIXED	FIXED		FIXED		Remote Pickup (74D)
MOBILE except aeronautical mobile	MOBILE		MOBILE		Private Land Mobile (90)
			US8 US11 US13 US55 US300 US312	US8 US11 US13 US55 US73 US300	
			173.2-173.4	173.2-173.4	
				FIXED	Private Land Mobile (90)
				Land mobile	
			173.4-174	173.4-174	
			FIXED		
5.226 5.229	5.226 5.230 5.231		MOBILE G5		

Table of Frequency Allocations							174-400.15 MHz (VHF/UHF)		
International Table			United States Table				FCC Rule Part(s)		
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table					
174-223 BROADCASTING	174-216 BROADCASTING Fixed Mobile	174-223 FIXED MOBILE BROADCASTING	174-216	174-216 BROADCASTING			Broadcast Radio (TV)(73) LPTV, TV Translator/ Booster (74G) Low Power Auxiliary (74H)		
	216-220 FIXED MARITIME MOBILE Radiolocation 5.241		216-217 Fixed Land mobile US210 US241 G2	216-219 FIXED MOBILE except aeronautical mobile			Maritime (80) Private Land Mobile (90) Personal Radio (95)		
	5.242		217-220 Fixed Mobile	US210 US241 NG173 219-220 FIXED MOBILE except aeronautical mobile Amateur NG152 US210 US241 NG173			Maritime (80) Private Land Mobile (90) Amateur Radio (97)		
	220-225 AMATEUR FIXED MOBILE Radiolocation 5.241		220-222 FIXED LAND MOBILE US241 US242 222-225	220-222 FIXED LAND MOBILE US241 US242 222-225			Private Land Mobile (90)		
	5.235 5.237 5.243 223-230 BROADCASTING		5.233 5.238 5.240 5.245 223-230 FIXED	222-225 AMATEUR			Amateur Radio (97)		

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272-273			
SPACE OPERATION (space-to-Earth)			
FIXED			
MOBILE			
5.254			
273-312			
FIXED			
MOBILE			
5.254			
312-315			
FIXED			
MOBILE			
Mobile-satellite (Earth-to-space) 5.254 5.255			
315-322			
FIXED			
MOBILE			
5.254		G27 G100	
322-328.6		322-328.6	
FIXED		FIXED	
MOBILE		MOBILE	
RADIO ASTRONOMY			
5.149		US342 G27	US342
328.6-335.4		328.6-335.4	

AERONAUTICAL RADIONAVIGATION 5.258	AERONAUTICAL RADIONAVIGATION 5.258	Aviation (87)
5.259		
335.4-387	335.4-399.9	335.4-399.9
FIXED	FIXED	
MOBILE	MOBILE	
5.254		
387-390		
FIXED		
MOBILE		
Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255		
390-399.9		
FIXED		
MOBILE		
5.254	G27 G100	
399.9-400.05	399.9-400.05	
MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	MOBILE-SATELLITE (Earth-to-space) US319 US320	Satellite Communications (25)
	RADIONAVIGATION-SATELLITE	
400.05-400.15	400.05-400.15	
STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)	
5.261 5.262	5.261	

Table of Frequency Allocations					400.15-456 MHz (UHF)	
Region 1 Table		International Table		United States Table		FCC Rule Part(s)
		Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
400.15-401				400.15-401	400.15-401	
METEOROLOGICAL AIDS				METEOROLOGICAL AIDS (radiosonde) US70	METEOROLOGICAL AIDS (radiosonde) US70	Satellite Communications (25)
METEOROLOGICAL-SATELLITE (space-to-Earth)				METEOROLOGICAL-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth) US319 US320 US324	
MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209				MOBILE-SATELLITE (space-to-Earth) US319 US320 US324	SPACE RESEARCH (space-to-Earth) 5.263	
SPACE RESEARCH (space-to-Earth) 5.263				SPACE RESEARCH (space-to-Earth) 5.263	Space operation (space-to-Earth)	
Space operation (space-to-Earth)				Space operation (space-to-Earth)		
5.262 5.264				5.264	5.264	
401-402				401-402	401-402	MedRadio (95I)
METEOROLOGICAL AIDS				METEOROLOGICAL AIDS (radiosonde) US70	METEOROLOGICAL AIDS (radiosonde) US70	
SPACE OPERATION (space-to-Earth)				SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	
EARTH EXPLORATION-SATELLITE (Earth-to-space)				EARTH EXPLORATION-SATELLITE (Earth-to-space)	Earth exploration-satellite (Earth-to-space)	
METEOROLOGICAL-SATELLITE (Earth-to-space)				METEOROLOGICAL-SATELLITE (Earth-to-space)	Meteorological-satellite (Earth-to-space)	
Fixed						
Mobile except aeronautical mobile						
402-403				402-403	402-403	
METEOROLOGICAL AIDS				METEOROLOGICAL AIDS (radiosonde) US70	METEOROLOGICAL AIDS (radiosonde) US70	
EARTH EXPLORATION-SATELLITE (Earth-to-space)						

METEOROLOGICAL-SATELLITE (Earth-to-space)	Earth exploration-satellite (Earth-to-space)	Earth exploration-satellite (Earth-to-space)	
	Meteorological-satellite (Earth-to-space)	Meteorological-satellite (Earth-to-space)	
Fixed	US64 US384	US64 US384	
Mobile except aeronautical mobile			
403-406	403-406	403-406	
METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	METEOROLOGICAL AIDS	
Fixed	(radiosonde) US70	(radiosonde) US70	
Mobile except aeronautical mobile			
5.265	US64 G6	US64	
406-406.1	406-406.1		
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
5.265 5.266 5.267	5.266 5.267		Maritime (EPIRBs) (80V) Aviation (ELTs) (87F) Personal Radio (95)
406.1-410	406.1-410	406.1-410	
FIXED	FIXED	RADIO ASTRONOMY US74	Private Land Mobile (90)
MOBILE except aeronautical mobile	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
5.149 5.265	US13 US55 US117 G5 G6	US13 US55 US117	
410-420	410-420	410-420	
FIXED	FIXED		Private Land Mobile (90)
MOBILE except aeronautical mobile	MOBILE		MedRadio (95I)
SPACE RESEARCH (space-to-space) 5.268	SPACE RESEARCH (space-to-space) 5.268		
	US13 US55 US64 G5	US13 US55 US64	

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Table of Frequency Allocations							456-894 MHz (UHF)	
International Table			United States Table			FCC Rule Part(s)		
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table				
456-459			456-459	456-460				
FIXED				FIXED		Public Mobile (22)		
MOBILE 5.286AA				LAND MOBILE		Maritime (80)		
5.271 5.287 5.288			US287 US64 US288			Private Land Mobile (90)		
459-460	459-460	459-460	459-460			MedRadio (95)		
FIXED	FIXED	FIXED						
MOBILE 5.286AA	MOBILE 5.286AA	MOBILE 5.286AA						
	MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C							
5.209 5.271 5.286A 5.286B		5.209 5.271 5.286A 5.286B		US64 US287 US288 NG32 NG112				
5.286C 5.286E	5.209	5.286C 5.286E		NG124 NG148				
460-470			460-470	460-462.5375				
FIXED			Meteorological-satellite (space-to-Earth)	FIXED		Private Land Mobile (90)		
MOBILE 5.286AA				LAND MOBILE				
				US209 US289 NG124				
				462.5375-462.7375				
				LAND MOBILE		Personal Radio (95)		
				US289				
				462.7375-467.5375				
				FIXED		Maritime (80)		
				LAND MOBILE		Private Land Mobile (90)		
				US73 US209 US287 US288 US289 NG124				

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5.149 5.291A 5.294 5.296	614-698 BROADCASTING Fixed Mobile 5.293 5.308 5.308A 5.309 5.311A 698-806 MOBILE 5.317A BROADCASTING Fixed
5.300 5.304 5.306 5.311A	
5.312	
694-790	
MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING	
5.300 5.311A 5.312	5.293 5.309 5.311A
790-862	
FIXED	

MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING	806-890 FIXED MOBILE 5.317A BROADCASTING	5.149 5.305 5.306 5.307 5.311A 5.320	NG34 NG159 805-806 FIXED MOBILE BROADCASTING NG159 806-809 LAND MOBILE 809-849 FIXED LAND MOBILE 849-851 AERONAUTICAL MOBILE 851-854 LAND MOBILE 854-894 FIXED LAND MOBILE US116 US268	Wireless Communications (27) LPTV and TV Translator (74G) Public Safety Land Mobile (90S) Public Mobile (22) Private Land Mobile (90) Public Mobile (22) Public Safety Land Mobile (90S) Public Mobile (22) Private Land Mobile (90)
	5.312 5.319 862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.319 5.323			

Table of Frequency Allocations					
894-1400 MHz (UHF)					
International Table			United States Table		
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	FCC Rule Part(s)
890-942	890-902	890-942	890-902		
FIXED	FIXED	FIXED		(See previous page)	
MOBILE except aeronautical	MOBILE except aeronautical	MOBILE 5.317A		AERONAUTICAL MOBILE	Public Mobile (22)
mobile 5.317A	mobile 5.317A	BROADCASTING		US116 US268	
BROADCASTING 5.322	Radiolocation	Radiolocation		896-901	
Radiolocation				FIXED	Private Land Mobile (90)
				LAND MOBILE	
				US116 US268	
	5.318 5.325		US116 US268 G2	901-902	
				FIXED	Personal Communications (24)
				MOBILE	
				US116 US268	
	902-928		902-928		
FIXED	FIXED		RADIOLOCATION G59		RF Devices (15)
Amateur	Amateur				ISM Equipment (18)
Mobile except aeronautical	Mobile except aeronautical				Private Land Mobile (90)
mobile 5.325A	mobile 5.325A				Amateur Radio (97)
Radiolocation	Radiolocation				
	5.150 5.325 5.326		5.150 US218 US267 US275 G11	5.150 US218 US267 US275	
	928-942		928-932	928-929	Public Mobile (22)
FIXED	FIXED			FIXED	Private Land Mobile (90)
MOBILE except aeronautical	MOBILE except aeronautical			US116 US268 NG35	Fixed Microwave (101)

mobile 5.317A Radiolocation	5.323	5.325	5.327	929-930 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				930-931 FIXED MOBILE US116 US268	Personal Communications (24)
				931-932 FIXED LAND MOBILE US116 US268	Public Mobile (22)
				932-935 FIXED US268 G2 US268 NG35	Public Mobile (22) Fixed Microwave (101)
				935-940 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				940-941 FIXED MOBILE US116 US268	Personal Communications (24)
				US116 US268 G2	
				932-935 FIXED US268 G2	
				935-941	
				US116 US268 G2	

942-960	942-960	942-960	941-944	941-944	Public Mobile (22)
FIXED	FIXED	FIXED	FIXED	FIXED	Aural Broadcast Auxiliary (74E)
MOBILE except aeronautical	MOBILE 5.317A	MOBILE 5.317A	US84 US268 US301 G2	US84 US268 US301 NG35	Low Power Auxiliary (74H)
mobile 5.317A	BROADCASTING	BROADCASTING	944-960	944-960	Fixed Microwave (101)
BROADCASTING 5.322				FIXED	
5.323	5.320			NG35	
960-1164			960-1164		Aviation (87)
AERONAUTICAL MOBILE (R) 5.327A			AERONAUTICAL MOBILE (R) 5.327A		
AERONAUTICAL RADIONAVIGATION 5.328			AERONAUTICAL RADIONAVIGATION 5.328		
5.328AA			US224		
1164-1215			1164-1215		
AERONAUTICAL RADIONAVIGATION 5.328			AERONAUTICAL RADIONAVIGATION 5.328		
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B			RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)		
5.328A			5.328A US224		
1215-1240			1215-1240	1215-1240	
EARTH EXPLORATION-SATELLITE (active)			EARTH EXPLORATION-SATELLITE (active)	Earth exploration-satellite (active)	
RADIOLOCATION			RADIOLOCATION G56	Space research (active)	
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A			RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) G132		
SPACE RESEARCH (active)			SPACE RESEARCH (active)		
5.330 5.331 5.332			5.332		
1240-1300			1240-1300	1240-1300	
EARTH EXPLORATION-SATELLITE (active)			EARTH EXPLORATION-SATELLITE (active)	AERONAUTICAL	Amateur Radio (97)
RADIOLOCATION			RADIOLOCATION G56	RADIONAVIGATION	
RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A			SPACE RESEARCH (active)	Amateur	
				Earth exploration-satellite (active)	

SPACE RESEARCH (active)	AERONAUTICAL RADIONAVIGATION	Space research (active)	
Amateur 5.282 5.330 5.331 5.332 5.335 5.335A 1300-1350	5.332 5.335 1300-1350	5.282 1300-1350	
RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space)	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation G2 US342	AERONAUTICAL RADIONAVIGATION 5.337 US342	Aviation (87)
5.149 5.337A 1350-1400 FIXED MOBILE RADIOLOCATION	1350-1390 FIXED MOBILE RADIOLOCATION G2 5.334 5.339 US342 US385 G27 G114 1390-1395	1350-1390 5.334 5.339 US342 US385 1390-1395	
5.149 5.338 5.338A 5.339	5.339 US79 US342 US385 1395-1400 LAND MOBILE (medical telemetry and medical telecommand) 5.339 US79 US342 US385	FIXED MOBILE except aeronautical mobile 5.339 US79 US342 US385 NG338A	Wireless Communications (27) Personal Radio (95)

Table of Frequency Allocations					1400-1626.5 MHz (UHF)	
Region 1 Table		International Table		United States Table		FCC Rule Part(s)
		Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
1400-1427				1400-1427		
EARTH EXPLORATION-SATELLITE (passive)				EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY				RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)				SPACE RESEARCH (passive)		
5.340 5.341				5.341 US246		
1427-1429				1427-1429.5	1427-1429.5	
SPACE OPERATION (Earth-to-space)				LAND MOBILE (medical telemetry and medical telecommand) US350	LAND MOBILE (telemetry and telecommand) Fixed (telemetry)	Private Land Mobile (90) Personal Radio (95)
FIXED						
MOBILE except aeronautical mobile 5.341A 5.341B 5.341C				5.341 US79	5.341 US79 US350 NG338A	
5.338A 5.341						
1429-1452		1429-1452		1429 5-1432	1429 5-1432	
FIXED		FIXED			FIXED (telemetry and telecommand)	
MOBILE except aeronautical mobile 5.341A		MOBILE 5.341B 5.341C 5.343			LAND MOBILE (telemetry and telecommand)	
				5.341 US79 US350	5.341 US79 US350 NG338A	
				1432-1435	1432-1435	
					FIXED	Wireless
					MOBILE except aeronautical mobile	Communications (27)
5.338A 5.341 5.342		5.338A 5.341		5.341 US83	5.341 US83 NG338A	

1452-1492	1452-1492	1435-1525	Aviation (87)
FIXED	FIXED	MOBILE (aeronautical telemetry) US338A	
MOBILE except aeronautical mobile	MOBILE 5.341B 5.343 5.346A		
5.346	BROADCASTING		
BROADCASTING	BROADCASTING-SATELLITE 5.208B		
BROADCASTING-SATELLITE 5.208B			
5.341 5.342 5.345	5.341 5.344 5.345		
1492-1518	1492-1518		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE 5.341B 5.343		
5.341A			
5.341 5.342	5.341 5.344		
1518-1525	1518-1525		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE 5.343		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
5.348 5.348A 5.348B 5.351A	5.348 5.348A 5.348B 5.351A		
5.341 5.342	5.341 5.344		
		5.341 US84 US343	

1525-1530	1525-1530	1525-1530	1525-1535	Satellite Communications (25) Maritime (80)
SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.349	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Fixed Mobile 5.343	SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349	MOBILE-SATELLITE (space-to-Earth) US315 US380	
5.341 5.342 5.350 5.351 5.352A 5.354	5.341 5.351 5.354	5.341 5.351 5.352A 5.354	5.341 5.351	
1530-1535	1530-1535		1535-1559	Satellite Communications (25) Maritime (80) Aviation (87)
SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343		MOBILE-SATELLITE (space-to-Earth) US308 US309 US315 US380 5.341 5.351 5.356	
5.341 5.342 5.351 5.354	5.341 5.351 5.354		1559-1610	Aviation (87)
1535-1559	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A		AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.341 US85 US208 US260	

1610-1610.6	1610-1610.6	1610-1610.6	1610-1610.6	1610-1610.6	Satellite Communications (25) Aviation (87)
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space) US319 US380	Satellite Communications (25) Aviation (87)
5.351A	5.351A	5.351A	5.351A	AERONAUTICAL RADIONAVIGATION US260	
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIODETERMINATION-SATELLITE (Earth-to-space)	
	Radiodetermination-satellite (Earth-to-space)			5.341 5.355 5.359 5.364 5.366	
5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.367 5.368 5.369 5.371 5.372	
5.367 5.368 5.369 5.371 5.372	5.370 5.372	5.370 5.372	5.370 5.372	1610.6-1613.8	Satellite Communications (25) Aviation (87)
1610.6-1613.8	1610.6-1613.8	1610.6-1613.8	1610.6-1613.8	MOBILE-SATELLITE (Earth-to-space)	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	5.351A	
5.351A	5.351A	5.351A	5.351A	RADIO ASTRONOMY	
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY	AERONAUTICAL RADIONAVIGATION	
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIODETERMINATION-SATELLITE (Earth-to-space)	Satellite Communications (25) Aviation (87)
	Radiodetermination-satellite (Earth-to-space)			5.149 5.341 5.355 5.359 5.364 5.366	
5.149 5.341 5.355 5.359 5.364 5.366	5.149 5.341 5.355 5.359 5.364 5.366	5.149 5.341 5.355 5.359 5.364 5.366	5.149 5.341 5.355 5.359 5.364 5.366	5.367 5.368 5.369 5.371 5.372	
5.367 5.368 5.369 5.371 5.372	5.370 5.372	5.370 5.372	5.370 5.372	1613.8-1626.5	
1613.8-1626.5	1613.8-1626.5	1613.8-1626.5	1613.8-1626.5	MOBILE-SATELLITE (Earth-to-space)	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	5.351A	Satellite Communications (25) Aviation (87)
5.351A	5.351A	5.351A	5.351A	AERONAUTICAL RADIONAVIGATION	
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	RADIODETERMINATION-SATELLITE (Earth-to-space)	
Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)	5.341 5.355 5.359 5.364 5.366	
5.208B	5.208B	5.208B	5.208B	5.367 5.368 5.369 5.371 5.372	
5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.341 5.355 5.359 5.364 5.366	5.367 5.368 5.369 5.371 5.372	Satellite Communications (25) Aviation (87)
5.367 5.368 5.369 5.371 5.372	5.370 5.372	5.370 5.372	5.370 5.372	1613.8-1626.5	
1613.8-1626.5	1613.8-1626.5	1613.8-1626.5	1613.8-1626.5	MOBILE-SATELLITE (Earth-to-space)	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	5.351A	
5.351A	5.351A	5.351A	5.351A	AERONAUTICAL RADIONAVIGATION	

2310-2320 Fixed Mobile US100 Radiolocation G2 US97 US327	2310-2320 FIXED MOBILE BROADCASTING-SATELLITE RADIOLOCATION 5.396 US97 US100 US327	Wireless Communications (27)
2320-2345 Fixed Radiolocation G2 US327	2320-2345 BROADCASTING-SATELLITE 5.396 US327	Satellite Communications (25)
2345-2360 Fixed Mobile US100 Radiolocation G2 US327	2345-2360 FIXED MOBILE US100 BROADCASTING-SATELLITE RADIOLOCATION 5.396 US327	Wireless Communications (27)
2360-2390 MOBILE US276 RADIOLOCATION G2 G120 Fixed US101 2390-2395 MOBILE US276	2360-2390 MOBILE US276 US101 2390-2395 AMATEUR	Aviation (87) Personal Radio (95) Aviation (87)

5.150 5.282 5.393 5.394 5.396

5.150 5.282 5.395

		US101	MOBILE US276 US101	Personal Radio (95) Amateur Radio (97)
		2395-2400	2395-2400 AMATEUR	Personal Radio (95) Amateur Radio (97)
		US101 G122	US101	
		2400-2417	2400-2417 AMATEUR	RF Devices (15) ISM Equipment (18) Amateur Radio (97)
		5.150 G122	5.150 5.282	
		2417-2450	2417-2450 Amateur	
		Radiolocation G2	5.150 5.282	
		5.150		
2450-2483.5	2450-2483.5	2450-2483.5	2450-2483.5 FIXED MOBILE Radiolocation	RF Devices (15) ISM Equipment (18) TV Auxiliary Broadcasting (74F) Private Land Mobile (90) Fixed Microwave (101)
		5.150	5.150 US41	

2483.5-3500 MHz (UHF/SHF)							
Table of Frequency Allocations			International Table		United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table			
2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 US380 US391 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2495 MOBILE-SATELLITE (space-to-Earth) US380 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 5.150 5.402 US41 US319 NG147	ISM Equipment (18) Satellite Communications (25) Wireless Communications (27)	ISM Equipment (18) Satellite Communications (25) Wireless Communications (27)	
			2495-2500 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) US380 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 5.150 5.402 US41 US319 US391 NG147				
2500-2520 FIXED 5.410 MOBILE except aeronautical mobile 5.384A 5.412	2500-2520 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A 5.404	2500-2520 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A 5.351A 5.407 5.414 5.414A 5.404 5.415A	2500-2655 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A 5.404 5.415A	2500-2655 FIXED US205 MOBILE except aeronautical mobile	Wireless Communications (27)	Wireless Communications (27)	

2520-2655	2520-2655	2520-2535	5.339	5.339
FIXED 5.410	FIXED 5.410	FIXED 5.410	5.339 US205	2655-2690
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (space-to-Earth) 5.415	FIXED-SATELLITE (space-to-Earth) 5.415	Earth exploration-satellite (passive)	FIXED US205
BROADCASTING-SATELLITE 5.413 5.416	Earth) 5.415	MOBILE except aeronautical mobile 5.384A	Radio astronomy US385	MOBILE except aeronautical mobile
	MOBILE except aeronautical mobile 5.384A	BROADCASTING-SATELLITE 5.413 5.416	Space research (passive)	Earth exploration-satellite (passive)
	BROADCASTING-SATELLITE 5.413 5.416	5.403 5.414A 5.415A		Radio astronomy
	5.413 5.416	2535-2655		Space research (passive)
		FIXED 5.410		
		MOBILE except aeronautical mobile 5.384A		
		BROADCASTING-SATELLITE 5.413 5.416		
5.339 5.412 5.418B 5.418C	5.339 5.418B 5.418C	5.339 5.418 5.418A 5.418B 5.418C		
2655-2670	2655-2670	2655-2670		
FIXED 5.410	FIXED 5.410	FIXED 5.410		
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415	FIXED-SATELLITE (Earth-to-space) 5.415		
BROADCASTING-SATELLITE 5.208B 5.413 5.416	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A		
Earth exploration-satellite (passive)	BROADCASTING-SATELLITE 5.413 5.416	BROADCASTING-SATELLITE 5.413 5.416		
Radio astronomy	5.413 5.416	Earth exploration-satellite (passive)		
Space research (passive)	Earth exploration-satellite (passive)	Radio astronomy		
	Radio astronomy	Space research (passive)		
	Space research (passive)			
5.149 5.412	5.149 5.208B	5.149 5.208B 5.420		

2670-2690	2670-2690	2670-2690	US205	US385	
FIXED 5.410	FIXED 5.410	FIXED 5.410			
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.208B 5.415	FIXED-SATELLITE (Earth-to-space) 5.415			
Earth exploration-satellite (passive)	MOBILE except aeronautical mobile 5.384A	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419			
Radio astronomy	Earth exploration-satellite (passive)	Earth exploration-satellite (passive)			
Space research (passive)	Radio astronomy	Radio astronomy			
5.149 5.412	Space research (passive)	Space research (passive)			
	5.149	5.149	US205	US385	
2690-2700			2690-2700		
EARTH EXPLORATION-SATELLITE (passive)			EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY			RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)			SPACE RESEARCH (passive)		
5.340 5.422			US246		
2700-2900			2700-2900	2700-2900	
AERONAUTICAL RADIONAVIGATION 5.337			METEOROLOGICAL AIDS		Aviation (87)
Radiolocation			AERONAUTICAL RADIONAVIGATION 5.337 US18		
			Radiolocation G2		
5.423 5.424			5.423 G15	5.423 US18	
2900-3100			2900-3100	2900-3100	
RADIOLOCATION 5.424A			RADIOLOCATION 5.424A G56	MARITIME RADIONAVIGATION	Maritime (80)
RADIONAVIGATION 5.426			MARITIME RADIONAVIGATION	Radiolocation US44	Private Land Mobile (90)

5.425 5.427		5.427 US44 US316	5.427 US316	
3100-3300		3100-3300	3100-3300	Private Land Mobile (90)
RADIOLOCATION		RADIOLOCATION G59	Earth exploration-satellite (active)	
Earth exploration-satellite (active)		Earth exploration-satellite (active)	Space research (active)	
Space research (active)		Space research (active)	Radiolocation	
5.149 5.428		US342	US342	
3300-3400	3300-3400	3300-3500	3300-3500	Private Land Mobile (90)
RADIOLOCATION	RADIOLOCATION	RADIOLOCATION US108 G2	Amateur	Amateur Radio (97)
5.149 5.429 5.429A 5.429B	Amateur		Radiolocation US108	
5.430	Fixed			
	Mobile			
	5.149 5.429C 5.429D			
3400-3600	3400-3500			
FIXED	FIXED			
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)			
MOBILE except aeronautical mobile 5.430A	MOBILE except aeronautical mobile 5.431A 5.431B			
Radiolocation	Amateur			
	Radiolocation 5.433			
5.431	5.282	US342	5.282 US342	
	5.282 5.432A			
	FIXED			
	FIXED-SATELLITE (space-to-Earth)			
	Amateur			
	Mobile 5.432 5.432B			
	Radiolocation 5.433			

Table of Frequency Allocations

3500-5460 MHz (SHF)

International Table			United States Table			FCC Rule Part(s)
Region 1 Table (See previous page)	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.431B Radiolocation 5.433	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3500-3550 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 3550-3650 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110	3500-3550 Radiolocation 3550-3600 FIXED MOBILE except aeronautical mobile US105 US433 3600-3650 FIXED FIXED-SATELLITE (space-to-Earth) US107 US245 MOBILE except aeronautical mobile US105 US433	Private Land Mobile (90) Citizens Broadband (96)	
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.434 Radiolocation 5.433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.435	US105 US107 US245 US433 3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 NG185 MOBILE except aeronautical mobile US109 US349 US109 US349		Satellite Communications (25) Citizens Broadband (96)	
	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200 FIXED MOBILE except aeronautical mobile NG182 NG457A 4000-4200	3700-4000 FIXED MOBILE except aeronautical mobile NG182 NG457A 4000-4200	Wireless Communications (27)	

		FIXED	Satellite Communications (25)
4200-4400		FIXED-SATELLITE (space-to-Earth) NG457A NG182	
AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440	4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE 5.440A	4400-4940 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A		4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy 5.149 5.339 5.443	US113 US245 US342 4940-4990	4800-4940 US113 US342 4940-4990 FIXED MOBILE except aeronautical mobile 5.339 US342 US385	Public Safety Land Mobile (90Y)
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		

5000-5010	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	5000-5010 AERONAUTICAL MOBILE (R) US115 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (Earth-to-space) US211	Aviation (87)
5010-5030	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B	5010-5030 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B US115 US211	
5030-5091	AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION	5030-5091 AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION US260 US211 US444	
5.444			
5091-5150	FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION	5091-5150 AERONAUTICAL MOBILE US111 US444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 US211 US344 US444 US444A	Satellite Communications (25) Aviation (87)
5.444			
5150-5250	FIXED-SATELLITE (Earth-to-space) 5.447A	5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A	RF Devices (15)

MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION	US260	US344	Satellite Communications (25) Aviation (87)
5.446 5.446C 5.447 5.447B 5.447C	US211 US307 US344	5.447C US211 US307	
5250-5255 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D	5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.447D	5250-5255 Earth exploration-satellite (active) Radiolocation Space research	RF Devices (15) Private Land Mobile (90)
5.447E 5.448 5.448A	5.448A		
5255-5350 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active)	5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active)	5255-5350 Earth exploration-satellite (active) Radiolocation Space research (active)	
5.447E 5.448 5.448A	5.448A	5.448A	
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C	5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION G56 AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active)	5350-5460 AERONAUTICAL RADIONAVIGATION 5.449 Earth exploration-satellite (active) 5.448B Radiolocation Space research (active)	Aviation (87) Private Land Mobile (90)
	US390 G130	US390	

5460-7145 MHz (SHF)						
International Table			United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
5460-5470			5460-5470	5460-5470		Maritime (80) Aviation (87) Private Land Mobile (90)
EARTH EXPLORATION-SATELLITE (active)			EARTH EXPLORATION-SATELLITE (active)	RADIONAVIGATION 5.449 US65		
RADIOLOCATION 5.448D			RADIOLOCATION G56	Earth exploration-satellite (active)		
RADIONAVIGATION 5.449			RADIONAVIGATION 5.449 US65	Radiolocation		
SPACE RESEARCH (active)			SPACE RESEARCH (active)	Space research (active)		
5.448B			5.448B US49 G130	5.448B US49		
5470-5570			5470-5570	5470-5570		
EARTH EXPLORATION-SATELLITE (active)			EARTH EXPLORATION-SATELLITE (active)	RADIOLOCATION	RF Devices (15)	
MOBILE except aeronautical mobile 5.446A 5.450A			RADIOLOCATION G56	MARITIME RADIONAVIGATION US65	Maritime (80)	
RADIOLOCATION 5.450B			MARITIME RADIONAVIGATION US65	Earth exploration-satellite (active)	Private Land Mobile (90)	
MARITIME RADIONAVIGATION			SPACE RESEARCH (active)	Space research (active)		
SPACE RESEARCH (active)			5.448B US50 G131	US50		
5.448B 5.450 5.451			5570-5600	5570-5600		
5570-5650			RADIOLOCATION G56	RADIOLOCATION		
MOBILE except aeronautical mobile 5.446A 5.450A			MARITIME RADIONAVIGATION US65	MARITIME RADIONAVIGATION US65		
RADIOLOCATION 5.450B			US50 G131	US50		
MARITIME RADIONAVIGATION			5600-5650	5600-5650		
			METEOROLOGICAL AIDS	METEOROLOGICAL AIDS		
			RADIOLOCATION G56	RADIOLOCATION		
			MARITIME RADIONAVIGATION US65	MARITIME RADIONAVIGATION US65		
5.450 5.451 5.452						

5650-5725 MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION Amateur Space research (deep space)	5.452 US50 G131		5.452 US50	
	5650-5830 RADIOLOCATION G2		5650-5830 Amateur	RF Devices (15) ISM Equipment (18) Amateur Radio (97)
	5.282 5.451 5.453 5.454 5.455		5.150 5.282	
	5725-5830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur		5830-5850 Amateur Amateur-satellite (space-to-Earth)	
5.150 5.451 5.453 5.455 5830-5850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth)	5.150 5.453 5.455		5.150	
	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		5850-5925 FIXED-SATELLITE (Earth-to-space) US245 MOBILE NG160 Amateur	RF Devices (15) ISM Equipment (18) Private Land Mobile (90) Personal Radio (95)
	5.150 5.453 5.455		5.150 5.453 5.455	
	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	
5.150 US245				

Amateur Radiolocation	Radiolocation			Amateur Radio (97)
5.150	5.150	5.150		
5925-6700		5925-6425	5925-6425	
FIXED 5.457			FIXED	RF Devices (15)
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B			FIXED-SATELLITE (Earth-to-space)	Satellite Communications (25)
MOBILE 5.457C			NG457A	Fixed Microwave (101)
		6425-6525	6425-6525	
			FIXED-SATELLITE (Earth-to-space)	RF Devices (15)
			MOBILE	Satellite Communications (25)
		5.440 5.458	5.440 5.458	TV Broadcast Auxiliary (74F)
				Cable TV Relay (78)
				Fixed Microwave (101)
		6525-6700	6525-6700	
			FIXED	RF Devices (15)
			FIXED-SATELLITE (Earth-to-space)	Satellite Communications (25)
5.149 5.440 5.458		5.458 US342	5.458 US342	Fixed Microwave (101)
6700-7075		6700-7125	6700-6875	
FIXED			FIXED	
FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441			FIXED-SATELLITE (Earth-to-space)	
MOBILE			(space-to-Earth) 5.441	
			5.458 5.458A 5.458B	

5.458 5.458A 5.458B			6875-7025	RF Devices (15)
			FIXED NG118	Satellite Communications (25)
			FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441	TV Broadcast Auxiliary (74F)
			MOBILE NG171	Cable TV Relay (78)
5.458 5.458A 5.458B			5.458 5.458A 5.458B	
			7025-7075	RF Devices (15)
			FIXED NG118	TV Broadcast Auxiliary (74F)
			FIXED-SATELLITE (Earth-to-space) NG172	Cable TV Relay (78)
5.458 5.458A 5.458B			MOBILE NG171	
			5.458 5.458A 5.458B	
			7075-7125	
			FIXED NG118	
5.458 5.459			MOBILE NG171	
			5.458	
			7125-7145	RF Devices (15)
			FIXED	
5.458 5.459			5.458 G116	

Table of Frequency Allocations					7145-8650 MHz (SHF)	
International Table			United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
7145-7190			7145-7190	7145-7235		
FIXED			FIXED			
MOBILE			SPACE RESEARCH (deep space)(Earth-to-space)			
SPACE RESEARCH (deep space) (Earth-to-space)			US262			
5.458 5.459			5.458 G116			
7190-7235			7190-7235			
EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B			EARTH EXPLORATION-SATELLITE (Earth-to-space)			
FIXED			5.460A 5.460B			
MOBILE			FIXED			
SPACE RESEARCH (Earth-to-space) 5.460			SPACE RESEARCH (Earth-to-space) 5.460			
5.458 5.459			5.458 G134	5.458 US262		
7235-7250			7235-7250	7235-7250		
EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A			EARTH EXPLORATION-SATELLITE (Earth-to-space)			
FIXED			5.460A			
MOBILE			FIXED			
5.458			5.458	5.458		
7250-7300			7250-7300	7250-8025		
FIXED			FIXED-SATELLITE (space-to-Earth)			
FIXED-SATELLITE (space-to-Earth)			MOBILE-SATELLITE (space-to-Earth)			
MOBILE			Fixed			
5.461			G117			

RF Devices (15)

7300-7375	7300-7375
FIXED	FIXED
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
MOBILE except aeronautical mobile	Mobile-satellite (space-to-Earth)
5.461	G117
7375-7450	7375-7450
FIXED	FIXED
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB	MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA
	5.461AB
	Mobile-satellite except maritime mobile-satellite (space-to-Earth)
	G117
7450-7550	7450-7550
FIXED	FIXED
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
METEOROLOGICAL-SATELLITE (space-to-Earth)	METEOROLOGICAL-SATELLITE (space-to-Earth)
MOBILE except aeronautical mobile	MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA
MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB	5.461AB
	Mobile-satellite except maritime mobile-satellite (space-to-Earth)
5.461A	G104 G117
7550-7750	7550-7750
FIXED	FIXED
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)

MOBILE except aeronautical mobile			
MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB	MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB Mobile-satellite except maritime mobile-satellite (space-to-Earth)		
7750-7900	G117		
FIXED			
METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B	7750-7900 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth)		
MOBILE except aeronautical mobile	5.461B		
7900-8025	7900-8025		
FIXED	FIXED-SATELLITE (Earth-to-space)		
FIXED-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)		
MOBILE	Fixed		
5.461	G117		
8025-8175	8025-8175	8025-8400	
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE 5.463	Mobile-satellite (Earth-to-space)(no airborne transmissions)		
5.462A	US258 G117		
8175-8215	8175-8215		
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
METEOROLOGICAL-SATELLITE (Earth-to-space)	METEOROLOGICAL-SATELLITE (Earth-to-space)		
MOBILE 5.463	Mobile-satellite (Earth-to-space)(no airborne transmissions)		

5.462A	US258 G104 G117		
8215-8400	8215-8400		
EARTH EXPLORATION-SATELLITE (space-to-Earth)	EARTH EXPLORATION-SATELLITE (space-to-Earth)		
FIXED	FIXED		
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)		
MOBILE 5.463	Mobile-satellite (Earth-to-space)(no airborne transmissions)		
5.462A	US258 G117	US258	
8400-8500	8400-8450	8400-8450	
FIXED	FIXED	Space research (deep space)	
MOBILE except aeronautical mobile	SPACE RESEARCH (deep space)(space-to-Earth)	(space-to-Earth)	
SPACE RESEARCH (space-to-Earth) 5.465 5.466	8450-8500	8450-8500	
	FIXED	SPACE RESEARCH (space-to-Earth)	
8500-8550	8500-8550	8500-8550	
RADIOLOCATION	RADIOLOCATION G59	Radiolocation	Private Land Mobile (90)
5.468 5.469			
8550-8650	8550-8650	8550-8650	
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Earth exploration-satellite (active)	
RADIOLOCATION	RADIOLOCATION G59	Radiolocation	
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Space research (active)	
5.468 5.469 5.469A			

Table of Frequency Allocations					8.65-11.7 GHz (SHF)			FCC Rule Part(s)	
Region 1 Table		International Table		Region 3 Table	United States Table				
		Region 2 Table			Federal Table	Non-Federal Table			
8.65-8.75					8.65-9	8.65-9		Aviation (87) Private Land Mobile (90)	
RADIOLOCATION					RADIOLOCATION G59	Radiolocation			
5.468 5.469									
8.75-8.85									
RADIOLOCATION									
AERONAUTICAL RADIONAVIGATION 5.470									
5.471									
8.85-9									
RADIOLOCATION									
MARITIME RADIONAVIGATION 5.472									
5.473					US53	US53			
9-9.2					9-9.2	9-9.2			
AERONAUTICAL RADIONAVIGATION 5.337					AERONAUTICAL	AERONAUTICAL			
RADIOLOCATION					RADIONAVIGATION 5.337	RADIONAVIGATION 5.337			
5.471 5.473A					RADIOLOCATION G2	Radiolocation			
9.2-9.3					5.473A G19				
9.2-9.3					9.2-9.3	9.2-9.3			
EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C					MARITIME RADIONAVIGATION	MARITIME RADIONAVIGATION			
RADIOLOCATION					5.472	5.472			
MARITIME RADIONAVIGATION 5.472					Radiolocation US110 G59	Radiolocation US110			
5.473 5.474 5.474D					5.474	5.474			

9.3-9.5	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION 5.475 SPACE RESEARCH (active)	9.3-9.5 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION US475 SPACE RESEARCH (active) Meteorological aids 5.427 5.474 5.475A 5.475B US67 US71 US476A	9.3-9.5 RADIONAVIGATION US475 Meteorological aids Earth exploration-satellite (active) Radiolocation Space research (active) 5.427 5.474 US67 US71 US476A	Maritime (80) Aviation (87) Private Land Mobile (90)
5.427 5.474 5.475A 5.475B 5.476A				
9.5-9.8	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	9.5-9.8 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	9.5-9.9 Earth exploration-satellite (active) Radiolocation Space research (active)	Private Land Mobile (90)
9.8-9.9	RADIOLOCATION Earth exploration-satellite (active) Fixed Space research (active) 5.477 5.478 5.478A 5.478B	9.8-9.9 RADIOLOCATION Earth exploration-satellite (active) Space research (active)		
9.9-10	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed	9.9-10 RADIOLOCATION	9.9-10 Radiolocation	

5.474D 5.477 5.478 5.479	5.479	5.479	
10-10.4	10-10.4	10-10.4	10-10.45
EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur	EARTH EXPLORATION-SATELLITE LITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Amateur	EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur	Amateur Radiolocation US108
5.474D 5.479	5.474D 5.479 5.480	5.474D 5.479	5.479 US128 NG50
10.4-10.45	10.4-10.45	10.4-10.45	10.45-10.5
FIXED MOBILE RADIOLOCATION Amateur	RADIOLOCATION Amateur 5.480	FIXED MOBILE RADIOLOCATION Amateur	Amateur Amateur-satellite Radiolocation US108 US128 NG50
10.45-10.5			
RADIOLOCATION Amateur Amateur-satellite			
5.481		5.479 US128	
10.5-10.55	10.5-10.55	10.5-10.55	
FIXED MOBILE Radiolocation	FIXED MOBILE RADIOLOCATION	RADIOLOCATION US59	Private Land Mobile (90)
10.55-10.6		10.55-10.6	10.55-10.6
FIXED			FIXED Fixed Microwave (101)

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				US131 US211		NG527A	
Table of Frequency Allocations							
11.7-14.47 GHz (SHF)							
International Table				United States Table			
Region 1 Table		Region 2 Table		Region 3 Table		Federal Table	Non-Federal Table
11.2-11.45 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile 11.45-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile 11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	11.2-11.45 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile 11.45-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile 11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488 Mobile except aeronautical mobile 5.485 12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488	11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	11.7-12.2 FIXED-SATELLITE (space-to-Earth) 5.485 5.488 NG143 NG527A	Satellite Communications (25)			

5.485 5.489	12.2-12.7	12.2-12.75	12.2-12.7	Satellite Communications (25) Fixed Microwave (101)
5.487 5.487A	12.5-12.75	12.5-12.75	12.5-12.75	TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
5.494 5.495 5.496	12.7-12.75	12.7-12.75	12.7-12.75	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
12.75-13.25	12.75-13.25	12.75-13.25	12.75-13.25	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
13.25-13.4	13.25-13.4	13.25-13.4	13.25-13.4	Aviation (87)

5.498A 5.499		5.498A		
13.4-13.65	13.4-13.65	13.4-13.75	13.4-13.75	Private Land Mobile (90)
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	Earth exploration-satellite (active)	
SATELLITE (active)	RADIOLOCATION	SATELLITE (active)	Radiolocation	
FIXED-SATELLITE (space-to-Earth)	SPACE RESEARCH 5.499C 5.499D	RADIOLOCATION G59	Space research	
5.499A 5.499B	Standard frequency and time signal-satellite (Earth-to-space)	SPACE RESEARCH 5.499C 5.499D 5.501A	Standard frequency and time signal-satellite (Earth-to-space)	
RADIOLOCATION		Standard frequency and time signal-satellite (Earth-to-space)		
SPACE RESEARCH 5.499C 5.499D				
Standard frequency and time signal-satellite (Earth-to-space)				
5.499 5.499E 5.500 5.501 5.501B	5.499 5.500 5.501 5.501B			
13.65-13.75				
EARTH EXPLORATION-SATELLITE (active)				
RADIOLOCATION				
SPACE RESEARCH 5.501A				
Standard frequency and time signal-satellite (Earth-to-space)				
5.499 5.500 5.501 5.501B		5.501B		
13.75-14		13.75-14	13.75-14	Satellite Communications (25) Private Land Mobile (90)
FIXED-SATELLITE (Earth-to-space) 5.484A		RADIOLOCATION G59	FIXED-SATELLITE (Earth-to-space) US337	
RADIOLOCATION		Standard frequency and time signal-satellite (Earth-to-space)	Standard frequency and time signal-satellite (Earth-to-space)	
Earth exploration-satellite		Space research US337	Space research Radiolocation	
Standard frequency and time signal-satellite (Earth-to-space)				
Space research		US356 US357	US356 US357	
5.499 5.500 5.501 5.502 5.503				

14-14.25	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research	14-14.2 Space research US133	14-14.2 FIXED-SATELLITE (Earth-to-space) NG527A Mobile-satellite (Earth-to-space) Space research US133	Satellite Communications (25)
5.504A 5.505		14.2-14.4	14.2-14.47 FIXED-SATELLITE (Earth-to-space) NG527A Mobile-satellite (Earth-to-space)	
14.25-14.3	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research			
5.504A 5.505 5.508				
14.3-14.4	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A		
14.4-14.47	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile	14.4-14.47 Fixed Mobile		

Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth)								
5.504A								
Table of Frequency Allocations						14.47-18.6 GHz (SHF)		
International Table			United States Table			FCC Rule Part(s)		
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table				
14.47-14.5			14.47-14.5	14.47-14.5				
FIXED			Fixed	FIXED-SATELLITE (Earth-to-space)		Satellite		
FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B			Mobile	NG527A		Communications (25)		
MOBILE except aeronautical mobile			Mobile-satellite (Earth-to-space)					
Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A								
Radio astronomy								
5.149 5.504A			US113 US133 US342	US113 US133 US342				
14.5-14.75			14.5-14.7145	14.5-14.8				
FIXED			FIXED					
FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510			Mobile					
MOBILE			Space research 5.509G					
Space research 5.509G			14.7145-14.8					
14.75-14.8			MOBILE					
FIXED			Fixed					
FIXED-SATELLITE (Earth-to-space) 5.510			Space research 5.509G					
MOBILE								
Space research 5.509G								
14.8-15.35			14.8-15.1365	14.8-15.1365				
FIXED			MOBILE					
			SPACE RESEARCH					

MOBILE Space research	Fixed			
	US310	US310		
	15.1365-15.35	15.1365-15.35		
	FIXED			
	SPACE RESEARCH			
	Mobile			
	5.339 US211	5.339 US211		
	15.35-15.4			
	EARTH EXPLORATION-SATELLITE (passive)			
	RADIO ASTRONOMY			
5.339	SPACE RESEARCH (passive)			
	US246			
	15.4-15.43	15.4-15.43		
	RADIOLOCATION 5.511E	AERONAUTICAL		Aviation (87)
	5.511F US511E	RADIONAVIGATION US260		
	AERONAUTICAL			
	RADIONAVIGATION US260			
	US211	US211 US511E		
	15.43-15.63	15.43-15.63		
	RADIOLOCATION 5.511E	FIXED-SATELLITE (Earth-to-space)		Satellite
15.43-15.63	5.511F US511E	AERONAUTICAL		Communications (25)
	AERONAUTICAL	RADIONAVIGATION US260		Aviation (87)
	RADIONAVIGATION US260			
	5.511C US211 US359	5.511C US211 US359 US511E		
	FIXED-SATELLITE (Earth-to-space) 5.511A			
	RADIOLOCATION 5.511E 5.511F			
	AERONAUTICAL RADIONAVIGATION			
	5.511C			

15.63-15.7	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION	15.63-15.7 RADIOLOCATION 5.511E 5.511F US511E AERONAUTICAL RADIONAVIGATION US260 US211	15.63-15.7 AERONAUTICAL RADIONAVIGATION US260 US211 US511E	Aviation (87)
15.7-16.6	RADIOLOCATION	15.7-16.6 RADIOLOCATION G59	15.7-17.2 Radiolocation	Private Land Mobile (90)
5.512 5.513				
16.6-17.1	RADIOLOCATION Space research (deep space) (Earth-to-space)	16.6-17.1 RADIOLOCATION G59 Space research (deep space) (Earth-to-space)		
5.512 5.513				
17.1-17.2	RADIOLOCATION	17.1-17.2 RADIOLOCATION G59		
5.512 5.513				
17.2-17.3	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	17.2-17.3 EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active)	17.2-17.3 Earth exploration-satellite (active) Radiolocation Space research (active)	
5.512 5.513 5.513A				
17.3-17.7	FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516	17.3-17.7 FIXED-SATELLITE (Earth-to-space) US271	Satellite Communications (25)

Radiolocation	BROADCASTING-SATELLITE Radiolocation	Radiolocation		BROADCASTING-SATELLITE
5.514	5.514 5.515	5.514	US402 G117	US402 NG163 US259
17.7-18.1	17.7-17.8	17.7-18.1	17.7-17.8	17.7-17.8
FIXED	FIXED	FIXED	FIXED	FIXED
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
5.484A (Earth-to-space) 5.516	5.517 (Earth-to-space) 5.516	5.484A (Earth-to-space) 5.516	US271	US271
MOBILE	BROADCASTING-SATELLITE	MOBILE		
	Mobile			
	5.515		US334 G117	US334
	17.8-18.1		17.8-18.3	17.8-18.3
	FIXED		FIXED-SATELLITE (space-to-Earth)	FIXED
	FIXED-SATELLITE (space-to-Earth)		Earth) US334 G117	Fixed-satellite (space-to-Earth)
	5.484A (Earth-to-space) 5.516			
	MOBILE			
	5.519		US519	US334 US519
18.1-18.4			18.3-18.6	18.3-18.6
FIXED			FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520			Earth) US334 G117	NG164 NG527A
MOBILE				
5.519 5.521				
18.4-18.6				
FIXED				
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B				
MOBILE			US139	US139 US334

Table of Frequency Allocations 18.6-24.45 GHz (SHF)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) 5.522A	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE (space-to- Earth) US255 US334 G117 SPACE RESEARCH (passive) US139 US254	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) US255 NG164 NG527A SPACE RESEARCH (passive) US139 US254 US334	Satellite Communications (25)
18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE	18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE		18.8-20.2 FIXED-SATELLITE (space-to- Earth) US334 G117	18.8-19.3 FIXED-SATELLITE (space-to-Earth) NG165 US139 US334	
19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE		19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) NG166 US334	19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) NG166 US334	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth)	19.7-20.1 FIXED-SATELLITE (space-to-Earth) NG527A MOBILE-SATELLITE (space-to-Earth)	Satellite Communications (25)

5.524	5.524 5.525 5.526 5.527 5.528 5.529	5.524			
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth)				
5.524 5.525 5.526 5.527 5.528			US139	5.525 5.526 5.527 5.528 5.529 US334	
20.2-21.2	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth)				
5.524			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)	
21.2-21.4	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)				
5.524			21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) US632		Fixed Microwave (101)
21.4-22	21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530D	21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530D 5.531			

22-22.21	22-22.21		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
5.149	US342		
22.21-22.5	22.21-22.5		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
FIXED	FIXED		
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile		
RADIO ASTRONOMY	RADIO ASTRONOMY		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.149 5.532	US342 US532		
22.5-22.55	22.5-22.55		
FIXED	FIXED		
MOBILE	MOBILE		
	US211		
22.55-23.15	22.55-23.15		Satellite
FIXED	FIXED		Communications (25)
INTER-SATELLITE 5.338A	INTER-SATELLITE US145 US278		Fixed Microwave (101)
MOBILE	MOBILE		
SPACE RESEARCH (Earth-to-space) 5.532A	SPACE RESEARCH (Earth-to-space) 5.532A		
5.149	US342		
23.15-23.55	23.15-23.55		
FIXED	FIXED		
INTER-SATELLITE 5.338A	INTER-SATELLITE US145 US278		

MOBILE	MOBILE		
23.55-23.6	23.55-23.6		Fixed Microwave (101)
FIXED	FIXED		
MOBILE	MOBILE		
23.6-24	23.6-24		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	US246		
24-24.05	24-24.05	24-24.05	
AMATEUR	AMATEUR	AMATEUR	ISM Equipment (18)
AMATEUR-SATELLITE	AMATEUR-SATELLITE	AMATEUR-SATELLITE	Amateur Radio (97)
5.150	5.150 US211	5.150 US211	
24.05-24.25	24.05-24.25	24.05-24.25	
RADIOLOCATION	RADIOLOCATION G59	Amateur	RF Devices (15)
Amateur	Earth exploration-satellite (active)	Earth exploration-satellite (active)	ISM Equipment (18)
Earth exploration-satellite (active)		Radiolocation	Private Land Mobile (90)
5.150	5.150	5.150	Amateur Radio (97)
24.25-24.45	24.25-24.45	24.25-24.45	
FIXED	FIXED	FIXED	RF Devices (15)
	MOBILE	MOBILE	Upper Microwave
	RADIONAVIGATION		Flexible Use (30)

Table of Frequency Allocations

24.45-31.8 GHz (SHF/EHF)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
24.45-24.65 FIXED INTER-SATELLITE	24.45-24.65 INTER-SATELLITE RADIONAVIGATION 5.533	24.45-24.65 FIXED INTER-SATELLITE MOBILE RADIONAVIGATION 5.533	24.45-24.65 INTER-SATELLITE RADIONAVIGATION 5.533		RF Devices (15) Satellite Communications (25)
24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE	24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.533	24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)		
24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B	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 FIXED FIXED-SATELLITE (Earth-to-space) NG65 MOBILE	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) NG65 MOBILE	RF Devices (15) Satellite Communications (25) Upper Microwave Flexible Use (30)
25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)			25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time	25.25-25.5 Inter-satellite 5.536 Standard frequency and time signal-satellite (Earth-to-space)	RF Devices (15)

		signal-satellite (Earth-to-space)	
25.5-27	25.5-27	SPACE RESEARCH (space-to-Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 SPACE RESEARCH (space-to-Earth) Inter-satellite 5.536 Standard frequency and time signal-satellite (Earth-to-space) 5.536A US258
27-27.5	27-27.5	FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 MOBILE	27-27.5 Inter-satellite 5.536
27.5-28.5	27.5-30	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE	27.5-28.35 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 27.5-28.35 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 28.35-29.1 FIXED-SATELLITE (Earth-to-space) NG165 NG527A
5.538 5.540			RF Devices (15) Satellite Communications (25) Upper Microwave Flexible Use (30) Fixed Microwave (101) RF Devices (15) Satellite Communications (25)

28.5-29.1	FIXED	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539		NG62	
MOBILE	Earth exploration-satellite (Earth-to-space) 5.541			29.1-29.25	Satellite
5.540				FIXED	Communications (25)
29.1-29.5	FIXED	FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A		FIXED-SATELLITE (Earth-to-space)	Fixed Microwave (101)
MOBILE	Earth exploration-satellite (Earth-to-space) 5.541			NG166	
5.540				MOBILE	
29.5-29.9	FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	29.25-29.5	Satellite
5.484A 5.484B 5.516B 5.527A	5.484A 5.484B 5.516B 5.527A	5.484A 5.484B 5.516B 5.527A	5.484A 5.484B 5.516B 5.527A	FIXED-SATELLITE (Earth-to-space)	Communications (25)
5.539	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	NG527A NG535A	
Earth exploration-satellite (Earth-to-space) 5.541	Earth exploration-satellite (Earth-to-space) 5.541	Earth exploration-satellite (Earth-to-space) 5.541	Earth exploration-satellite (Earth-to-space) 5.541	NG62	
Mobile-satellite (Earth-to-space)	Mobile-satellite (Earth-to-space)	Mobile-satellite (Earth-to-space)	Mobile-satellite (Earth-to-space)	29.5-30	
5.540 5.542	5.525 5.526 5.527 5.529 5.540	5.525 5.526 5.527 5.529 5.540	5.525 5.526 5.527 5.529 5.540	FIXED-SATELLITE (Earth-to-space)	
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539			NG527A	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	
					5.525 5.526 5.527 5.529 5.543

Earth exploration-satellite (Earth-to-space) 5.541 5.543			
5.525 5.526 5.527 5.538 5.540 5.542			
30-31	30-31	30-31	
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	Standard frequency and time	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	signal-satellite (space-to-Earth)	
Standard frequency and time	Standard frequency and time		
signal-satellite (space-to-Earth)	signal-satellite (space-to-Earth)		
G117	G117		
5.542			
31-31.3	31-31.3	31-31.3	Fixed Microwave (101)
FIXED 5.338A 5.543A	Standard frequency and time	FIXED NG60	
MOBILE	signal-satellite (space-to-Earth)	MOBILE	
Standard frequency and time		Standard frequency and time	
signal-satellite (space-to-Earth)		signal-satellite (space-to-Earth)	
Space research 5.544 5.545			
5.149	US211 US342	US211 US342	
31.3-31.5	31.3-31.8		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340			
31.5-31.8	31.5-31.8	31.5-31.8	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
Fixed	Fixed	Fixed	
Mobile except aeronautical mobile 5.149 5.546	Mobile except aeronautical mobile 5.340	Mobile except aeronautical mobile 5.149	
	US246		

Table of Frequency Allocations					31.8-42 GHz (EHF)		
International Table			United States Table			FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table			
31.8-32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)		31.8-32.3	31.8-32.3		SPACE RESEARCH (deep space) (space-to-Earth) US262	
RADIONAVIGATION US69							
SPACE RESEARCH (deep space) (space-to-Earth) US262							
5.548 US211							
5.547 5.547B 5.548	32-32.3 FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)		5.548 US211	5.548 US211		Aviation (87)	
32.3-33							
INTER-SATELLITE US278							
RADIONAVIGATION US69							
5.547 5.547D 5.548	33-33.4 FIXED 5.547A RADIONAVIGATION 5.547 5.547E		5.548			US360 G117	
33-33.4							
RADIONAVIGATION US69							
US360 G117							
33.4-34.2	33.4-34.2 RADIOLOCATION 5.549		33.4-34.2	33.4-34.2		Private Land Mobile (90)	
RADIOLOCATION							
US360 G117							
US360							

34.2-34.7	34.2-34.7	34.2-34.7
RADIOLOCATION	RADIOLOCATION	Radiolocation
SPACE RESEARCH (deep space) (Earth-to-space)	SPACE RESEARCH (deep space) (Earth-to-space) US262	Space research (deep space) (Earth-to-space) US262
5.549	US360 G34 G117	US360
34.7-35.2	34.7-35.5	34.7-35.5
RADIOLOCATION	RADIOLOCATION	Radiolocation
Space research 5.550		
5.549		
35.2-35.5		
METEOROLOGICAL AIDS		
RADIOLOCATION		
5.549	US360 G117	US360
35.5-36	35.5-36	35.5-36
METEOROLOGICAL AIDS	EARTH EXPLORATION-SATELLITE (active)	Earth exploration-satellite (active)
EARTH EXPLORATION-SATELLITE (active)		
RADIOLOCATION	RADIOLOCATION	Radiolocation
SPACE RESEARCH (active)	SPACE RESEARCH (active)	Space research (active)
5.549 5.549A	US360 G117	US360
36-37	36-37	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
FIXED	FIXED	
MOBILE	MOBILE	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.149 5.550A	US342 US550A	

37-37.5	37-38	37-37.5	Upper Microwave Flexible Use (30)
FIXED	FIXED	FIXED	
MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile	
SPACE RESEARCH (space-to-Earth)	SPACE RESEARCH (space-to-Earth)		
5.547	US151	US151	
37.5-38		37.5-38	Satellite
FIXED		FIXED	Communications (25)
FIXED-SATELLITE (space-to-Earth)		FIXED-SATELLITE (space-to-Earth)	
MOBILE except aeronautical mobile		NG63	Upper Microwave
SPACE RESEARCH (space-to-Earth)		MOBILE except aeronautical mobile	Flexible Use (30)
Earth exploration-satellite (space-to-Earth)			
5.547	US151	US151	
38-39.5	38-38.6	38-39.5	
FIXED	FIXED	FIXED	
FIXED-SATELLITE (space-to-Earth)	MOBILE	FIXED-SATELLITE (space-to-Earth)	
MOBILE	38.6-39.5	NG63	
Earth exploration-satellite (space-to-Earth)		MOBILE NG175	
5.547			
39.5-40	39.5-40	39.5-40	
FIXED	FIXED-SATELLITE (space-to-Earth)	FIXED	
FIXED-SATELLITE (space-to-Earth) 5.516B	MOBILE-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	
MOBILE	US382	NG63	
MOBILE-SATELLITE (space-to-Earth)		MOBILE NG175	
Earth exploration-satellite (space-to-Earth)			
5.547	G117	US382	

40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space)			40-40.5	40-40.5	Satellite Communications (25)
FIXED				EARTH EXPLORATION-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	
FIXED-SATELLITE (space-to-Earth)	5.516B			FIXED-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)	
MOBILE				MOBILE-SATELLITE (space-to-Earth)		
MOBILE-SATELLITE (space-to-Earth)				SPACE RESEARCH (Earth-to-space)		
SPACE RESEARCH (Earth-to-space)				Earth exploration-satellite (space-to-Earth)		
Earth exploration-satellite (space-to-Earth)				G117		
40.5-41	40.5-41	40.5-41	40.5-41	40.5-41	40.5-41	
FIXED	FIXED	FIXED	FIXED	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	Mobile-satellite (space-to-Earth)	BROADCASTING	
BROADCASTING	BROADCASTING	BROADCASTING	BROADCASTING		BROADCASTING-SATELLITE	
BROADCASTING-SATELLITE	BROADCASTING	BROADCASTING	BROADCASTING		Fixed	
Mobile	Mobile	Mobile	Mobile		Mobile	
	Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)	Mobile-satellite (space-to-Earth)		Mobile-satellite (space-to-Earth)	
5.547	5.547	5.547	5.547	US211 G117	US211	
41-42.5				41-42.5	41-42	
FIXED					FIXED	
FIXED-SATELLITE (space-to-Earth)	5.516B				FIXED-SATELLITE (space-to-Earth)	
BROADCASTING					MOBILE	
BROADCASTING-SATELLITE					BROADCASTING	
Mobile					BROADCASTING-SATELLITE	
5.547 5.551F 5.551H 5.551I				US211	US211	

Table of Frequency Allocations					42-56.9 GHz (EHF)		FCC Rule Part(s)	
International Table			United States Table					
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table				
(See previous page)			(See previous page)	42-42.5 FIXED MOBILE US211				
42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY			42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile RADIO ASTRONOMY US342	42.5-43.5 RADIO ASTRONOMY US342				
5.149 5.547 43.5-47 MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE			43.5-45.5 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) G117 45.5-46.9 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE 5.554 46.9-47 MOBILE MOBILE-SATELLITE (Earth-to-space)	43.5-45.5				
5.554								

	RADIONAVIGATION-SATELLITE	MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE	
47.47.2 AMATEUR AMATEUR-SATELLITE 47.2-47.5	5.554 47-48.2	5.554 47-47.2 AMATEUR AMATEUR-SATELLITE 47.2-48.2	Amateur Radio (97)
FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A		FIXED FIXED-SATELLITE (Earth-to-space) US297 NG65 MOBILE	Satellite Communications (25) Upper Microwave Flexible Use (30)
47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE	47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE		
47.9-48.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A			
48.2-48.54 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B	48.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) US156 US297		Satellite Communications (25)

5.554A 5.555B MOBILE	MOBILE	MOBILE US264	
48.54-49.44 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE			
5.149 5.340 5.555 49.44-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	5.149 5.340 5.555	5.555 US342	
50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) US246	
50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-satellite (Earth-to-space)		50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) US156 MOBILE MOBILE-SATELLITE (Earth-to-space) G117 NG65	Satellite Communications (25)
51.4-52.6		51.4-52.6	

FIXED 5.338A	FIXED US157	
MOBILE	MOBILE	
5.547 5.556		
52.6-54.25	52.6-54.25	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.340 5.556	US246	
54.25-55.78	54.25-55.78	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	Satellite Communications (25)
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.556B		
55.78-56.9	55.78-56.9	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
FIXED 5.557A	FIXED US379	
INTER-SATELLITE 5.556A	INTER-SATELLITE 5.556A	
MOBILE 5.558	MOBILE 5.558	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.547 5.557	US353 US532	

Table of Frequency Allocations					56.9-81 GHz (EHF)	
Region 1 Table		International Table		United States Table		FCC Rule Part(s)
		Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
56.9-57				56.9-57	56.9-57	
EARTH EXPLORATION-SATELLITE (passive)				EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
FIXED				FIXED	FIXED	
INTER-SATELLITE 5.558A				INTER-SATELLITE G128	MOBILE 5.558	
MOBILE 5.558				MOBILE 5.558	SPACE RESEARCH (passive)	
SPACE RESEARCH (passive)				SPACE RESEARCH (passive)		
5.547 5.557				US532	US532	
57-58.2				57-58.2		
EARTH EXPLORATION-SATELLITE (passive)				EARTH EXPLORATION-SATELLITE (passive)		RF Devices (15)
FIXED				FIXED		Satellite Communications (25)
INTER-SATELLITE 5.556A				INTER-SATELLITE 5.556A		
MOBILE 5.558				MOBILE 5.558		
SPACE RESEARCH (passive)				SPACE RESEARCH (passive)		
5.547 5.557				US532		
58.2-59				58.2-59		
EARTH EXPLORATION-SATELLITE (passive)				EARTH EXPLORATION-SATELLITE (passive)		RF Devices (15)
FIXED				FIXED		
MOBILE				MOBILE		
SPACE RESEARCH (passive)				SPACE RESEARCH (passive)		
5.547 5.556				US353 US354		

59-59.3	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	59-59.3 EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive) US353	59-59.3 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive) US353	
59.3-64	FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	59.3-64 FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138 US353	59.3-64 FIXED MOBILE 5.558 RADIOLOCATION 5.559 5.138 US353	RF Devices (15) ISM Equipment (18)
64-65	FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	64-65 FIXED INTER-SATELLITE MOBILE except aeronautical mobile	64-65 FIXED MOBILE except aeronautical mobile	RF Devices (15)
65-66	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH	65-66 EARTH EXPLORATION-SATELLITE FIXED MOBILE except aeronautical mobile SPACE RESEARCH	65-66 EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile	RF Devices (15) Satellite Communications (25)

		SPACE RESEARCH	
5.547			
66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	66-71 MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	
71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) US389	71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) US389		Fixed Microwave (101)
74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) US389	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) US389	RF Devices (15) Fixed Microwave (101)
76-77.5 RADIO ASTRONOMY RADIOLOCATION	76-81 RADIO ASTRONOMY RADIOLOCATION	76-77 RADIO ASTRONOMY RADIOLOCATION Amateur	RF Devices (15) Personal Radio (95)

Amateur	Space research (space-to-Earth)	Amateur Radio (97)
Amateur-satellite	US342	
Space research (space-to-Earth)	77-81	
5.149	RADIO ASTRONOMY	
77-78	RADIOLOCATION	
AMATEUR	Amateur	
AMATEUR-SATELLITE	Amateur-satellite	
RADIOLOCATION 5.559B	Space research (space-to-Earth)	
Radio astronomy		
Space research (space-to-Earth)		
5.149		
78-79		
RADIOLOCATION		
Amateur		
Amateur-satellite		
Radio astronomy		
Space research (space-to-Earth)		
5.149 5.560		
79-81		
RADIO ASTRONOMY		
RADIOLOCATION		
Amateur		
Amateur-satellite		
Space research (space-to-Earth)		
5.149	5.560 US342	5.560 US342

Table of Frequency Allocations					81-123 GHz (EHF)	
International Table			United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
81-84			81-84			
FIXED 5.338A			FIXED		RF Devices (15)	
FIXED-SATELLITE (Earth-to-space)			FIXED-SATELLITE (Earth-to-space) US297		Fixed Microwave (101)	
MOBILE			MOBILE			
MOBILE-SATELLITE (Earth-to-space)			MOBILE-SATELLITE (Earth-to-space)			
RADIO ASTRONOMY			RADIO ASTRONOMY			
Space research (space-to-Earth)			Space research (space-to-Earth)			
5.149 5.561A			US161 US342 US389			
84-86			84-86			
FIXED 5.338A			FIXED			
FIXED-SATELLITE (Earth-to-space) 5.561B			FIXED-SATELLITE (Earth-to-space)			
MOBILE			MOBILE			
RADIO ASTRONOMY			RADIO ASTRONOMY			
5.149			US161 US342 US389			
86-92			86-92			
EARTH EXPLORATION-SATELLITE (passive)			EARTH EXPLORATION-SATELLITE (passive)			
RADIO ASTRONOMY			RADIO ASTRONOMY US74			
SPACE RESEARCH (passive)			SPACE RESEARCH (passive)			
5.340			US246			
92-94			92-94			
FIXED 5.338A			FIXED		RF Devices (15)	
MOBILE			MOBILE		Fixed Microwave (101)	
RADIO ASTRONOMY			RADIO ASTRONOMY			

RADIOLOCATION	RADIOLOCATION	
5.149	US161 US342	
94-94.1	94-94.1	94-94.1
EARTH EXPLORATION-SATELLITE (active)	EARTH EXPLORATION-SATELLITE (active)	RADIOLOCATION
RADIOLOCATION	RADIOLOCATION	Radio astronomy
SPACE RESEARCH (active)	SPACE RESEARCH (active)	
Radio astronomy	Radio astronomy	
5.562 5.562A	5.562 5.562A	5.562A
94.1-95	94.1-95	
FIXED	FIXED	
MOBILE	MOBILE	
RADIO ASTRONOMY	RADIO ASTRONOMY	
RADIOLOCATION	RADIOLOCATION	
5.149	US161 US342	
95-100	95-100	
FIXED	FIXED	
MOBILE	MOBILE	
RADIO ASTRONOMY	RADIO ASTRONOMY	
RADIOLOCATION	RADIOLOCATION	
RADIONAVIGATION	RADIONAVIGATION	
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE	
5.149 5.554	5.554 US342	
		RF Devices (15)
		Fixed Microwave (101)

100-102	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246
102-105	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	102-105 FIXED MOBILE RADIO ASTRONOMY 5.341 US342
105-109.5	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.341 US342
109.5-111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246
111.8-114.25	FIXED MOBILE RADIO ASTRONOMY	111.8-114.25 FIXED MOBILE RADIO ASTRONOMY

SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B	
5.149 5.341	5.341 US342	
114.25-116	114.25-116	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
RADIO ASTRONOMY	RADIO ASTRONOMY US74	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.340 5.341	5.341 US246	
116-119.98	116-122.25	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	ISM Equipment (18)
INTER-SATELLITE 5.562C	INTER-SATELLITE 5.562C	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.341		
119.98-122.25		
EARTH EXPLORATION-SATELLITE (passive)		
INTER-SATELLITE 5.562C		
SPACE RESEARCH (passive)		
5.138 5.341	5.138 5.341 US211	
122.25-123	122.25-123	
FIXED	FIXED	122.25-123 FIXED
INTER-SATELLITE	INTER-SATELLITE	INTER-SATELLITE
MOBILE 5.558	MOBILE 5.558	MOBILE 5.558
Amateur		Amateur
5.138	5.138	5.138

Table of Frequency Allocations					123-191.8 GHz (EHF)	
International Table			United States Table		FCC Rule Part(s)	
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table		
123-130			123-130			
FIXED-SATELLITE (space-to-Earth)			FIXED-SATELLITE (space-to-Earth)			
MOBILE-SATELLITE (space-to-Earth)			MOBILE-SATELLITE (space-to-Earth)			
RADIONAVIGATION			RADIONAVIGATION			
RADIONAVIGATION-SATELLITE			RADIONAVIGATION-SATELLITE			
Radio astronomy 5.562D			Radio astronomy			
5.149 5.554			5.554 US211 US342			
130-134			130-134			
EARTH EXPLORATION-SATELLITE (active) 5.562E			EARTH EXPLORATION-SATELLITE (active) 5.562E			
FIXED			FIXED			
INTER-SATELLITE			INTER-SATELLITE			
MOBILE 5.558			MOBILE 5.558			
RADIO ASTRONOMY			RADIO ASTRONOMY			
5.149 5.562A			5.562A US342			
134-136			134-136	134-136		
AMATEUR			Radio astronomy	AMATEUR		
AMATEUR-SATELLITE				AMATEUR-SATELLITE		
Radio astronomy				Radio astronomy		
136-141			136-141	136-141		
RADIO ASTRONOMY			RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION			RADIOLOCATION	RADIOLOCATION		
Amateur				Amateur		
Amateur-satellite				Amateur-satellite		
					Amateur Radio (97)	

5.149	US342	US342	
141-148.5	141-148.5		
FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
5.149	US342		
148.5-151.5	148.5-151.5		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	US246		
151.5-155.5	151.5-155.5		
FIXED	FIXED		
MOBILE	MOBILE		
RADIO ASTRONOMY	RADIO ASTRONOMY		
RADIOLOCATION	RADIOLOCATION		
5.149	US342		
155.5-158.5	155.5-158.5		
EARTH EXPLORATION-SATELLITE (passive)			
FIXED	FIXED		
MOBILE	MOBILE		
	RADIO ASTRONOMY		

RADIO ASTRONOMY			
SPACE RESEARCH (passive) 5.562B			
5.149 5.562F 5.562G	US342		
158.5-164	158.5-164		
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
MOBILE	MOBILE		
MOBILE-SATELLITE (space-to-Earth)	MOBILE-SATELLITE (space-to-Earth)		
	US211		
164-167	164-167		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340	US246		
167-174.5	167-174.5		
FIXED	FIXED		
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)		
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		
5.149 5.562D	US211 US342		
174.5-174.8	174.5-174.8		
FIXED	FIXED		
INTER-SATELLITE	INTER-SATELLITE		
MOBILE 5.558	MOBILE 5.558		

174.8-182	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	174.8-182	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	
182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	
5.340		US246		
185-190	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	
190-191.8	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	190-191.8	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	
5.340		US246		

Table of Frequency Allocations					
191.8-3000 GHz (EHF)					
International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
191.8-200			191.8-200		
FIXED			FIXED		
INTER-SATELLITE			INTER-SATELLITE		
MOBILE 5.558			MOBILE 5.558		
MOBILE-SATELLITE			MOBILE-SATELLITE		
RADIONAVIGATION			RADIONAVIGATION		
RADIONAVIGATION-SATELLITE			RADIONAVIGATION-SATELLITE		
5.149 5.341 5.554			5.341 5.554 US211 US342		
200-209			200-209		
EARTH EXPLORATION-SATELLITE (passive)			EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY			RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)			SPACE RESEARCH (passive)		
5.340 5.341 5.563A			5.341 5.563A US246		
209-217			209-217		
FIXED			FIXED		
FIXED-SATELLITE (Earth-to-space)			FIXED-SATELLITE (Earth-to-space)		
MOBILE			MOBILE		
RADIO ASTRONOMY			RADIO ASTRONOMY		
5.149 5.341			5.341 US342		
217-226			217-226		
FIXED			FIXED		
FIXED-SATELLITE (Earth-to-space)			FIXED-SATELLITE (Earth-to-space)		
MOBILE			MOBILE		

RADIO ASTRONOMY	RADIO ASTRONOMY	
SPACE RESEARCH (passive) 5.562B	SPACE RESEARCH (passive) 5.562B	
5.149 5.341	5.341 US342	
226-231.5	226-231.5	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
RADIO ASTRONOMY	RADIO ASTRONOMY	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.340	US246	
231.5-232	231.5-232	
FIXED	FIXED	
MOBILE	MOBILE	
Radiolocation	Radiolocation	
232-235	232-235	
FIXED	FIXED	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	
MOBILE	MOBILE	
Radiolocation	Radiolocation	
235-238	235-238	
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	
5.563A 5.563B	5.563A 5.563B	
238-240	238-240	
FIXED	FIXED	
FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)	
MOBILE	MOBILE	

RADIOLOCATION	RADIOLOCATION		
RADIONAVIGATION	RADIONAVIGATION		
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE		
240-241	240-241		
FIXED	FIXED		
MOBILE	MOBILE		
RADIOLOCATION	RADIOLOCATION		
241-248	241-248	241-248	
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY	ISM Equipment (18)
RADIOLOCATION	RADIOLOCATION	RADIOLOCATION	Amateur Radio (97)
Amateur		Amateur	
Amateur-satellite		Amateur-satellite	
5.138 5.149	5.138 US342	5.138 US342	
248-250	248-250	248-250	
AMATEUR	Radio astronomy	AMATEUR	Amateur Radio (97)
AMATEUR-SATELLITE		AMATEUR-SATELLITE	
Radio astronomy		Radio astronomy	
5.149	US342	US342	
250-252	250-252		
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)		
RADIO ASTRONOMY	RADIO ASTRONOMY US74		
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)		
5.340 5.563A	5.563A US246		
252-265	252-265		

FIXED	FIXED	
MOBILE	MOBILE	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	
RADIO ASTRONOMY	RADIO ASTRONOMY	
RADIONAVIGATION	RADIONAVIGATION	
RADIONAVIGATION-SATELLITE	RADIONAVIGATION-SATELLITE	
5.149 5.554	5.554 US211 US342	
265-275	265-275	
FIXED	FIXED	
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	
MOBILE	MOBILE	
RADIO ASTRONOMY	RADIO ASTRONOMY	
5.149 5.563A	5.563A US342	
275-3000 (Not allocated)	275-3000 (Not allocated)	
5.565	US565	Amateur Radio (97)

International Footnotes

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5.54B *Additional allocation:* In Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Morocco, Qatar, the Syrian Arab Republic, Sudan and Tunisia, the frequency band 8.3–9 kHz is also allocated to the radionavigation, fixed and mobile services on a primary basis. (WRC–15)

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5.55 *Additional allocation:* In Armenia, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequency band 14–17 kHz is also allocated to the radionavigation service on a primary basis. (WRC–15)

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5.68 *Alternative allocation:* In Congo (Rep. of the), the Dem. Rep. of the Congo and South Africa, the frequency band 160–200 kHz is allocated to the fixed service on a primary basis. (WRC–15)

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5.93 *Additional allocation:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency bands 1625–1635 kHz, 1800–1810 kHz and 2160–2170 kHz are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. 9.21. (WRC–15)

5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Croatia, Denmark, Estonia, the Russian Federation, Finland, Georgia, Hungary, Ireland, Iceland, Israel, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the frequency bands 1715–1800 kHz and 1850–2000 kHz. However, when allocating the frequency bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC–15)

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5.98 *Alternative allocation:* In Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan and Turkey, the frequency band 1810–1830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC–15)

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5.102 *Alternative allocation:* In Bolivia, Chile, Paraguay and Peru, the frequency band 1850–2000 kHz is allocated to the fixed,

mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC–15)

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5.119 *Additional allocation:* In Peru, the frequency band 3500–3750 kHz is also allocated to the fixed and mobile services on a primary basis. (WRC–15)

5.122 *Alternative allocation:* In Bolivia, Chile, Ecuador, Paraguay and Peru, the frequency band 3750–4000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC–15)

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5.132B *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 4438–4488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. (WRC–15)

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5.133A *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency bands 5250–5275 kHz and 26200–26350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC–15)

5.133B Stations in the amateur service using the frequency band 5351.5–5366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5351.5–5366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas territories of the Netherlands in Region 2, stations in the amateur service using the frequency band 5351.5–5366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC–15)

5.134 The use of the bands 5900–5950 kHz, 7300–7350 kHz, 9400–9500 kHz, 11600–11650 kHz, 12050–12100 kHz, 13570–13600 kHz, 13800–13870 kHz, 15600–15800 kHz, 17480–17550 kHz and 18900–19020 kHz by the broadcasting service is subject to the application of the procedure of Article 12. Administrations are encouraged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution 517 (Rev.WRC–15). (FCC)

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5.140 *Additional allocation:* In Angola, Iraq, Somalia and Togo, the frequency band 7000–7050 kHz is also allocated to the fixed service on a primary basis. (WRC–15)

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

Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7100–7200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC–15)

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5.145B *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency bands 9305–9355 kHz and 16100–16200 kHz are allocated to the fixed service on a primary basis. (WRC–15)

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5.149A *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 13450–13550 kHz is allocated to the fixed service on a primary basis and to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC–15)

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5.158 *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 24450–24600 kHz is allocated to the fixed and land mobile services on a primary basis. (WRC–15)

5.159 *Alternative allocation:* In Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 39–39.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC–15)

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5.161B *Alternative allocation:* In Albania, Germany, Armenia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Vatican, Croatia, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Rep. of Macedonia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Netherlands, Portugal, Kyrgyzstan, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland, Turkey and Ukraine, the frequency band 42–42.5 MHz is allocated to the fixed and mobile services on a primary basis. (WRC–15)

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5.164 *Additional allocation:* In Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the frequency band 47–68 MHz, in South Africa the frequency band 47–50 MHz, and in Latvia the frequency band 48.5–56.5 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause

harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band. (WRC–15)

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

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

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

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5.172 *Different category of service:* In the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 54–68 MHz to the fixed and mobile services is on a primary basis (see No. 5.33). (WRC–15)

5.173 *Different category of service:* In the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 68–72 MHz to the fixed and mobile services is on a primary basis (see No. 5.33). (WRC–15)

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5.185 *Different category of service:* In the United States, the French overseas departments and communities in Region 2, Guyana and Paraguay, the allocation of the frequency band 76–88 MHz to the fixed and mobile services is on a primary basis (see No. 5.33). (WRC–15)

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5.201 *Additional allocation:* In Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 132–136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC–15)

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

of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC–15)

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5.208B In the frequency bands:

137–138 MHz,
387–390 MHz,
400.15–401 MHz,
1452–1492 MHz,
1525–1610 MHz,
1613.8–1626.5 MHz,
2655–2690 MHz,
21.4–22 GHz,

Resolution 739 (Rev.WRC–15) applies. (WRC–15)

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5.211 *Additional allocation:* In Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Guinea, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the frequency band 138–144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC–15)

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

5.221 Stations of the mobile-satellite service in the frequency band 148–149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC–15)

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5.228AA The use of the frequency bands 161.9375–161.9625 MHz and 161.9875–

162.0125 MHz by the maritime mobile-satellite (Earth-to-space) service is limited to the systems which operate in accordance with Appendix 18. (WRC–15)

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

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5.265 In the frequency band 403–410 MHz, Resolution 205 (Rev.WRC–15) applies. (WRC–15)

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

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5.275 *Additional allocation:* In Croatia, Estonia, Finland, Libya, The Former Yugoslav Republic of Macedonia, Montenegro and Serbia, the frequency bands 430–432 MHz and 438–440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC–15)

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

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5.279A The use of the frequency band 432–438 MHz by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU–R RS.1260–1. Additionally, the Earth exploration-satellite service (active) in the frequency band 432–438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. 5.29 and 5.30. (WRC–15)

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5.286AA The frequency band 450–470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). See Resolution 224 (Rev.WRC–15). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC–15)

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5.287 Use of the frequency bands 457.5125–457.5875 MHz and 467.5125–467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU–R M.1174–3. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned. (WRC–15)

5.288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU–R M.1174–3. (WRC–15)

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5.291A *Additional allocation:* In Germany, Austria, Denmark, Estonia, Liechtenstein, the Czech Rep., Serbia and Switzerland, the frequency band 470–494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (WRC–97). (WRC–15)

5.292 *Different category of service:* In Argentina, Uruguay and Venezuela, the allocation of the frequency band 470–512 MHz to the mobile service is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. (WRC–15)

5.293 *Different category of service:* In Canada, Chile, Cuba, the United States, Guyana, Jamaica and Panama, the allocation of the frequency bands 470–512 MHz and 614–806 MHz to the fixed service is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. In the Bahamas, Barbados, Canada, Chile, Cuba, the United States, Guyana, Jamaica, Mexico and Panama, the allocation of the frequency bands 470–512 MHz and 614–698 MHz to the mobile service is on a primary basis (see No.

5.33), subject to agreement obtained under No. 9.21. In Argentina and Ecuador, the allocation of the frequency band 470–512 MHz to the fixed and mobile services is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. (WRC–15)

5.294 *Additional allocation:* In Saudi Arabia, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, Libya, the Syrian Arab Republic, Chad and Yemen, the frequency band 470–582 MHz is also allocated to the fixed service on a secondary basis. (WRC–15)

5.295 In the Bahamas, Barbados, Canada, the United States and Mexico, the frequency band 470–608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT)—see Resolution 224 (Rev.WRC–15). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply. In Mexico, the use of IMT in this frequency band will not start before 31 December 2018 and may be extended if agreed by the neighbouring countries. (WRC–15)

5.296 *Additional allocation:* In Albania, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Gabon, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, the United Kingdom, Rwanda, San Marino, Serbia, Sudan, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Togo, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the frequency band 470–694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC–15)

5.296A In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470–698 MHz, or portions thereof, and in Bangladesh, Maldives and New Zealand, the frequency band 610–698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT)—see Resolution 224 (Rev.WRC–15).

This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply. (WRC–15)

5.297 *Additional allocation:* In Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana and Jamaica, the frequency band 512–608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. 9.21. In the Bahamas, Barbados and Mexico, the frequency band 512–608 MHz is also allocated to the mobile service on a primary basis, subject to agreement obtained under No. 9.21. (WRC–15)

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5.300 *Additional allocation:* In Saudi Arabia, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Libya, Oman, Qatar, the Syrian Arab Republic and Sudan, the frequency band 582–790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC–15)

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5.308 *Additional allocation:* In Belize and Colombia, the frequency band 614–698 MHz is also allocated to the mobile service on a primary basis. Stations of the mobile service within the frequency band are subject to agreement obtained under No. 9.21. (WRC–15)

5.308A In the Bahamas, Barbados, Belize, Canada, Colombia, the United States and Mexico, the frequency band 614–698 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT)—see Resolution 224 (Rev.WRC–15). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. 9.21 and shall not cause harmful interference to or claim protection from the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply. In Belize and Mexico, the use of IMT in this frequency band will not start before 31 December 2018 and may be extended if agreed by the neighbouring countries. (WRC–15)

5.309 *Different category of service:* In El Salvador, the allocation of the frequency band 614–806 MHz to the fixed service is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21. (WRC–15)

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5.312 *Additional allocation:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645–862 MHz, in Bulgaria the frequency bands 646–686 MHz, 726–758

MHz, 766–814 MHz and 822–862 MHz, and in Poland the frequency band 860–862 MHz until 31 December 2017, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC–15)

5.312A In Region 1, the use of the frequency band 694–790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution 760 (WRC–15). See also Resolution 224 (Rev.WRC–15). (WRC–15)

5.313A The frequency band, or portions of the frequency band 698–790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. In China, the use of IMT in this frequency band will not start until 2015. (WRC–15)

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5.316B In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790–862 MHz is subject to agreement obtained under No. 9.21 with respect to the aeronautical radionavigation service in countries mentioned in No. 5.312. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions 224 (Rev.WRC–15) and 749 (Rev.WRC–15) shall apply, as appropriate. (WRC–15)

5.317 *Additional allocation:* In Region 2 (except Brazil, the United States and Mexico), the frequency band 806–890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21. The use of this service is intended for operation within national boundaries. (WRC–15)

5.317A The parts of the frequency band 698–960 MHz in Region 2 and the frequency bands 694–790 MHz in Region 1 and 790–960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT)—see Resolutions 224 (Rev.WRC–15), 760 (WRC–15) and 749 (Rev.WRC–15), where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC–15)

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5.325A *Different category of service:* In Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Mexico, Paraguay, Uruguay and Venezuela, the frequency band 902–928 MHz is allocated to the land mobile service on a primary basis.

In Colombia, the frequency band 902–905 MHz is allocated to the land mobile service on a primary basis. (WRC–15)

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5.327A The use of the frequency band 960–1164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 417 (Rev.WRC–15). (WRC–15)

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5.328AA The frequency band 1087.7–1092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to-space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution 425 (WRC–15) shall apply. (WRC–15)

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5.329 Use of the radionavigation-satellite service in the band 1215–1300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. 5.331. Furthermore, the use of the radionavigation-satellite service in the band 1215–1300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. 5.43 shall not apply in respect of the radiolocation service. Resolution 608 (Rev.WRC–15) shall apply. (FCC)

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5.338A In the frequency bands 1350–1400 MHz, 1427–1452 MHz, 22.55–23.55 GHz, 30–31.3 GHz, 49.7–50.2 GHz, 50.4–50.9 GHz, 51.4–52.6 GHz, 81–86 GHz and 92–94 GHz, Resolution 750 (Rev.WRC–15) applies. (WRC–15)

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5.341A In Region 1, the frequency bands 1427–1452 MHz and 1492–1518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC–15). This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. 5.342. (WRC–15)

5.341B In Region 2, the frequency band 1427–1518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC–15). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC–15)

5.341C The frequency bands 1427–1452 MHz and 1492–1518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC–15). The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1429–1452 MHz and 1492–1518 MHz is subject to agreement obtained under No. 9.21 from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC–15)

5.342 *Additional allocation:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Uzbekistan, Kyrgyzstan and Ukraine, the frequency band 1429–1535 MHz is also allocated to the aeronautical mobile service on a primary basis, exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the frequency band 1452–1492 MHz is subject to agreement between the administrations concerned. (WRC–15)

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5.345 Use of the band 1452–1492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC–15). (FCC)

5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1452–1492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC–15). This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. 5.342. See also Resolution 761 (WRC–15). (WRC–15)

Note: The use by Palestine of the allocation to the mobile service in the frequency band 1452–1492 MHz identified for IMT is noted, pursuant to Resolution 99 (Rev. Busan, 2014) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

5.346A The frequency band 1452–1492 MHz is identified for use by administrations in Region 3 wishing to implement

International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15) and Resolution 761 (WRC-15). The use of this frequency band by the above administrations for the implementation of IMT is subject to agreement obtained under No. 9.21 from countries using stations of the aeronautical mobile service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

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5.351A For the use of the bands 1518–1544 MHz, 1545–1559 MHz, 1610–1645.5 MHz, 1646.5–1660.5 MHz, 1668–1675 MHz, 1980–2010 MHz, 2170–2200 MHz, 2483.5–2520 MHz and 2670–2690 MHz by the mobile-satellite service, see Resolutions 212 (Rev.WRC-15) and 225 (Rev.WRC-12). (FCC)

5.352A In the frequency band 1525–1530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Algeria, Saudi Arabia, Egypt, France and French overseas communities of Region 3, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Viet Nam and Yemen notified prior to 1 April 1998. (WRC-15)

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5.359 *Additional allocation:* In Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Cameroon, the Russian Federation, France, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1550–1559 MHz, 1610–1645.5 MHz and 1646.5–1660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-15)

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5.382 *Different category of service:* In Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1690–1700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33), and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1690–1700 MHz to the fixed service is on a primary basis (see No. 5.33) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-15)

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5.384A The frequency bands, 1710–1885 MHz, 2300–2400 MHz and 2500–2690 MHz,

or portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

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5.386 *Additional allocation:* The frequency band 1750–1850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2 (except in Mexico), in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. 9.21, having particular regard to troposcatter systems. (WRC-15)

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5.388 The frequency bands 1885–2025 MHz and 2110–2200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution 212 (Rev.WRC-15) (see also Resolution 223 (Rev.WRC-15)). (WRC-15)

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5.391 In making assignments to the mobile service in the frequency bands 2025–2110 MHz and 2200–2290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154-0, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-15)

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5.393 *Additional allocation:* In Canada, the United States and India, the frequency band 2310–2360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-15), with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. (WRC-15)

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5.396 Space stations of the broadcasting-satellite service in the band 2310–2360 MHz operating in accordance with No. 5.393 that may affect the services to which this band is allocated in other countries shall be coordinated and notified in accordance with Resolution 33 (Rev.WRC-15). Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use. (FCC)

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5.401 In Angola, Australia, Bangladesh, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Swaziland, Togo and

Zambia, the frequency band 2483.5–2500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. 9.21 from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information. (WRC-15)

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5.418 *Additional allocation:* In India, the frequency band 2535–2655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-15). The provisions of No. 5.416 and Table 21-4 of Article 21, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution 539 (Rev.WRC-15). Geostationary broadcasting-satellite service (sound) systems for which complete Appendix 4 coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the frequency band 2630–2655 MHz, and for which complete Appendix 4 coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

—130 dB(W/(m² · MHz)) for 0° ≤ θ ≤ 5°
—130 + 0.4 (θ – 5) dB(W/(m² · MHz)) for 5° < θ ≤ 25°

—122 dB(W/(m² · MHz)) for 25° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of –122 dB(W/(m² · MHz)) shall be used as a threshold for coordination under No. 9.11 in an area of 1500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system.

In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. 5.416 for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. (WRC-15)

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5.428 *Additional allocation:* In Azerbaijan, Kyrgyzstan and Turkmenistan, the frequency band 3100–3300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-15)

5.429 *Additional allocation:* In Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of),

Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3300–3400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC–15)

5.429A *Additional allocation:* In Angola, Benin, Botswana, Burkina Faso, Burundi, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3300–3400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3300–3400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC–15)

5.429B In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3300–3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution 223 (Rev.WRC–15). The use of the frequency band 3300–3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC–15)

5.429C *Different category of service:* In Argentina, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3300–3400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Argentina, Brazil, Guatemala, Mexico and Paraguay, the frequency band 3300–3400 MHz is also allocated to the fixed service on a primary basis. Stations in the fixed and mobile services operating in the frequency band 3300–3400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC–15)

5.429D In the following countries in Region 2: Argentina, Colombia, Costa Rica, Ecuador, Mexico and Uruguay, the use of the frequency band 3300–3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use

shall be in accordance with Resolution 223 (Rev.WRC–15). This use in Argentina and Uruguay is subject to the application of No. 9.21. The use of the frequency band 3300–3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC–15)

5.429E *Additional allocation:* In Papua New Guinea, the frequency band 3300–3400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3300–3400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC–15)

5.429F In the following countries in Region 3: Cambodia, India, Lao P.D.R., Pakistan, the Philippines and Viet Nam, the use of the frequency band 3300–3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution 223 (Rev.WRC–15). The use of the frequency band 3300–3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. 9.21 with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC–15)

5.430 *Additional allocation:* In Azerbaijan, Kyrgyzstan and Turkmenistan, the frequency band 3300–3400 MHz is also allocated to the radionavigation service on a primary basis. (WRC–15)

5.430A The allocation of the frequency band 3400–3600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. 9.21. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. 9.17 and 9.18 shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met,

the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3400–3600 MHz shall not claim more protection from space stations than that provided in Table 21–4 of the Radio Regulations (Edition of 2004). This allocation is effective from 17 November 2010. (WRC–15)

5.431 *Additional allocation:* In Germany and Israel, the frequency band 3400–3475 MHz is also allocated to the amateur service on a secondary basis. (WRC–15)

5.431A In Region 2, the allocation of the frequency band 3400–3500 MHz to the mobile, except aeronautical mobile, service on a primary basis is subject to agreement obtained under No. 9.21. (WRC–15)

5.431B In Region 2, the frequency band 3400–3600 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. 9.21 with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3400–3600 MHz shall not claim more protection from space stations than that provided in Table 21–4 of the Radio Regulations (Edition of 2004). (WRC–15)

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5.432B *Different category of service:* In Australia, Bangladesh, China, French overseas communities of Region 3, India, Iran (Islamic Republic of), New Zealand, the Philippines and Singapore, the frequency band 3400–3500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. 9.21 with other

administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed – also apply. Be. 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3400–3500 MHz shall not claim more protection from space stations than that provided in Table 21–4 of the Radio Regulations (Edition of 2004). (WRC–15)

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5.433A In Australia, Bangladesh, China, French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, New Zealand, Pakistan and the Philippines, the frequency band 3500–3600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed – 154.5 dB(W/(m² · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3500–3600 MHz shall not claim more protection from space stations than that provided in Table 21–4 of the Radio Regulations (Edition of 2004). (WRC–15)

5.434 In Canada, Colombia, Costa Rica and the United States, the frequency band 3600–3700 MHz, or portions thereof, is identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. 9.21 with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed – 154.5 dB(W/(m² · 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3600–3700 MHz shall not claim more protection from space stations than that provided in Table 21–4 of the Radio Regulations (Edition of 2004). (WRC–15)

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5.436 Use of the frequency band 4200–4400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 424 (WRC–15). (WRC–15)

5.437 Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4200–4400 MHz on a secondary basis. (WRC–15)

5.438 Use of the frequency band 4200–4400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. (WRC–15)

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5.441A In Uruguay, the frequency band 4800–4900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service.

Such use shall be in accordance with Resolution 223 (Rev.WRC–15). (WRC–15)

5.441B In Cambodia, Lao P.D.R. and Viet Nam, the frequency band 4800–4990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density produced by this station does not exceed – 155 dB(W/(m² · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This criterion is subject to review at WRC–19. See Resolution 223 (Rev.WRC–15). This identification shall be effective after WRC–19. (WRC–15)

5.442 In the frequency bands 4825–4835 MHz and 4950–4990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), and in Australia, the frequency band 4825–4835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution 416 (WRC–07) and shall not cause harmful interference to the fixed service. (WRC–15)

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5.443B In order not to cause harmful interference to the microwave landing system operating above 5030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5030–5150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5010–5030 MHz shall not exceed – 124.5 dB(W/m²) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the frequency band 4990–5000 MHz, radionavigation-satellite service systems operating in the frequency band 5010–5030 MHz shall comply with the limits in the frequency band 4990–5000 MHz defined in Resolution 741 (Rev.WRC–15). (WRC–15)

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5.444 The frequency band 5030–5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the frequency band 5030–5091 MHz, the requirements of this system shall have priority over other uses of this frequency band. For the use of the frequency band 5091–5150 MHz, No. 5.444A and Resolution 114 (Rev.WRC–15) apply. (WRC–15)

5.444A The use of the allocation to the fixed-satellite service (Earth-to-space) in the

frequency band 5091–5150 MHz is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. 9.11A. The use of the frequency band 5091–5150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution 114 (Rev.WRC–15). Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service. (WRC–15)

5.444B The use of the frequency band 5091–5150 MHz by the aeronautical mobile service is limited to:

- systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution 748 (Rev.WRC–15);
- aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution 418 (Rev.WRC–15). (WRC–15)

5.446 *Additional allocation:* In the countries listed in No. 5.369, the frequency band 5150–5216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. 9.21. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. 5.369 and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the frequency bands 1610–1626.5 MHz and/or 2483.5–2500 MHz. The total power flux-density at the Earth's surface shall in no case exceed –159 dB (W/m²) in any 4 kHz band for all angles of arrival. (WRC–15)

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5.446C *Additional allocation:* In Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia) and in Brazil, the band 5150–5250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC–15). These stations shall not claim protection from other stations operating in accordance with Article 5. No. 5.43A does not apply. (FCC)

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5.447E *Additional allocation:* The frequency band 5250–5350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia,

Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this frequency band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613–0. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. 5.43A do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC–15)

5.447F In the frequency band 5250–5350 MHz, stations in the mobile service shall not claim protection from the radiodetermination service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638–0 and ITU-R RS.1632–0. (WRC–15)

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5.450A In the frequency band 5470–5725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638–0. (WRC–15)

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5.457A In the frequency bands 5925–6425 MHz and 14–14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution 902 (WRC–03). In the frequency band 5925–6425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of 1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution 902 (WRC–03) shall apply. (WRC–15)

5.457B In the frequency bands 5925–6425 MHz and 14–14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution 902 (WRC–03) in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution 902 (WRC–03). (WRC–15)

5.457C In Region 2 (except Brazil, Cuba, French overseas departments and

communities, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), the frequency band 5925–6700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. 1.83). Such use shall be in accordance with Resolution 416 (WRC–07) and shall not cause harmful interference to, or claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this frequency band by other mobile service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC–15)

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5.459 *Additional allocation:* In the Russian Federation, the frequency bands 7100–7155 MHz and 7190–7235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21. In the frequency band 7190–7235 MHz, with respect to the Earth exploration-satellite service (Earth-to-space), No. 9.21 does not apply. (WRC–15)

5.460 No emissions from space research service (Earth-to-space) systems intended for deep space shall be effected in the frequency band 7190–7235 MHz. Geostationary satellites in the space research service operating in the frequency band 7190–7235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. 5.43A does not apply. (WRC–15)

5.460A The use of the frequency band 7190–7250 MHz (Earth-to-space) by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of spacecraft. Space stations operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7190–7250 MHz shall not claim protection from existing and future stations in the fixed and mobile services, and No. 5.43A does not apply. No. 9.17 applies. Additionally, to ensure protection of the existing and future deployment of fixed and mobile services, the location of earth stations supporting spacecraft in the Earth exploration-satellite service in non-geostationary orbits or geostationary orbit shall maintain a separation distance of at least 10 km and 50 km, respectively, from the respective border(s) of neighbouring countries, unless a shorter distance is otherwise agreed between the corresponding administrations. (WRC–15)

5.460B Space stations on the geostationary orbit operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7190–7235 MHz shall not claim protection from existing and future stations of the space research service, and No. 5.43A does not apply. (WRC–15)

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5.461AA The use of the frequency band 7375–7750 MHz by the maritime mobile-satellite service is limited to geostationary-satellite networks. (WRC–15)

5.461AB In the frequency band 7375–7750 MHz, earth stations in the maritime mobile-satellite service shall not claim protection from, nor constrain the use and development of, stations in the fixed and

mobile, except aeronautical mobile, services. No. 5.43A does not apply. (WRC-15)

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

- 135 dB(W/m²) in a 1 MHz band for $0 \leq \theta < 5^\circ$
- $135 + 0.5 (\theta - 5)$ dB(W/m²) in a 1 MHz band for $5 \leq \theta < 25^\circ$
- 125 dB(W/m²) in a 1 MHz band for $25 \leq \theta \leq 90^\circ$ (WRC-12)

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5.468 *Additional allocation:* In Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Chad, Togo, Tunisia and Yemen, the frequency band 8500–8750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

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5.471 *Additional allocation:* In Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the frequency bands 8825–8850 MHz and 9000–9200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-15)

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5.474A The use of the frequency bands 9200–9300 MHz and 9900–10400 MHz by the Earth exploration-satellite service (active) is limited to systems requiring necessary bandwidth greater than 600 MHz that cannot be fully accommodated within the frequency band 9300–9900 MHz. Such use is subject to agreement to be obtained under No. 9.21 from Algeria, Saudi Arabia, Bahrain, Egypt, Indonesia, Iran (Islamic Republic of), Lebanon and Tunisia. An administration that has not replied under No. 9.52 is considered as not having agreed to the coordination request. In this case, the notifying administration of the satellite system operating in the Earth exploration-satellite service (active) may request the assistance of the Bureau under Sub-Section IID of Article 9. (WRC-15)

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

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

5.474D Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime

radionavigation and radiolocation services in the frequency band 9200–9300 MHz, the radionavigation and radiolocation services in the frequency band 9900–10000 MHz and the radiolocation service in the frequency band 10.0–10.4 GHz. (WRC-15)

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5.477 *Different category of service:* In Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9800–10000 MHz to the fixed service is on a primary basis (see No. 5.33). (WRC-15)

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5.480 *Additional allocation:* In Argentina, Brazil, Chile, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Paraguay, the Netherlands Antilles, Peru and Uruguay, the frequency band 10–10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Colombia, Costa Rica, Mexico and Venezuela, the frequency band 10–10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-15)

5.481 *Additional allocation:* In Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania and Uruguay, the frequency band 10.45–10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica, the frequency band 10.45–10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-15)

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5.486 *Different category of service:* In the United States, the allocation of the frequency band 11.7–12.1 GHz to the fixed service is on a secondary basis (see No. 5.32). (WRC-15)

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5.494 *Additional allocation:* In Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5–12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

5.495 *Additional allocation:* In France, Greece, Monaco, Montenegro, Uganda, Romania and Tunisia, the frequency band 12.5–12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-15)

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5.499A The use of the frequency band 13.4–13.65 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary-satellite systems and is subject to agreement

obtained under No. 9.21 with respect to satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015. (WRC-15)

5.499B Administrations shall not preclude the deployment and operation of transmitting earth stations in the standard frequency and time signal-satellite service (Earth-to-space) allocated on a secondary basis in the frequency band 13.4–13.65 GHz due to the primary allocation to FSS (space-to-Earth). (WRC-15)

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

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

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

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

5.499E In the frequency band 13.4–13.65 GHz, geostationary-satellite networks in the fixed-satellite service (space-to-Earth) shall not claim protection from space stations in the Earth exploration-satellite service (active) operating in accordance with these Regulations, and No. 5.43A does not apply. The provisions of No. 22.2 do not apply to the Earth exploration-satellite service (active) with respect to the fixed-satellite service (space-to-Earth) in this frequency band. (WRC-15)

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

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5.501A The allocation of the frequency band 13.65–13.75 GHz to the space research service on a primary basis is limited to active

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

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

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

5.505 *Additional allocation:* In Algeria, Saudi Arabia, Bahrain, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Djibouti, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Swaziland, Chad, Viet Nam and Yemen, the frequency band 14–14.3 GHz is also allocated to the fixed service on a primary basis. (WRC–15)

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

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

5.509A In the frequency band 14.3–14.5 GHz, the power flux-density produced on the

territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU–R M.1643–0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. 5.29. (WRC–15)

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

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

5.509D Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in the frequency bands 14.5–14.75 GHz (in countries listed in Resolution 163 (WRC–15)) and 14.5–14.8 GHz (in countries listed in Resolution 164 (WRC–15)), it shall ensure that the power flux-density produced by this earth station does not exceed –151.5 dBW/(m² · 4 kHz) produced at all altitudes from 0 m to 19000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (WRC–15)

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

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

constrain the future deployment of the fixed and mobile services. (WRC–15)

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

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

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

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

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

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5.514 *Additional allocation:* In Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan,

Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Sudan and South Sudan, the frequency band 17.3–17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 21.3 and 21.5 shall apply. (WRC–15)

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5.521 *Alternative allocation:* In the United Arab Emirates and Greece, the frequency band 18.1–18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. 5.33). The provisions of No. 5.519 also apply. (WRC–15)

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

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

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5.530D See Resolution 555 (Rev.WRC–15). (FCC)

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

from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC–15)

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5.543A In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the frequency band 31–31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the frequency band 31–31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. 5.545. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the frequency band 31–31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the frequency band 31.3–31.8 GHz, taking into account the protection criterion as given in the most recent version of Recommendation ITU–R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the frequency band 31.3–31.8 GHz shall be limited to -106 dB(W/MHz) under clear-sky conditions, and may be increased up to -100 dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions. See Resolution 145 (Rev.WRC–12). (WRC–15)

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

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

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

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

adopted in the absence of notified information).

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

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

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

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

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United States (US) Footnotes

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US99 In the band 1668.4–1670 MHz, the meteorological aids service (radiosonde) will avoid operations to the maximum extent practicable. Whenever it is necessary to operate radiosondes in the band 1668.4–1670 MHz within the United States, notification of the operations shall be sent as far in advance as possible to the National Science Foundation, Division of Astronomical Sciences, Electromagnetic Spectrum Management Unit, 2415 Eisenhower Avenue, Alexandria, VA 22314; Email: esm@nsf.gov.

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US287 In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU–R M.1174–2.

* * * * *

US385 Radio astronomy observations may be made in the bands 1350–1400 MHz, 1718.8–1722.2 MHz, and 4950–4990 MHz on an unprotected basis, and in the band 2655–2690 MHz on a secondary basis, at the following radio astronomy observatories:

Allen Telescope Array, Hat Creek, CA	Rectangle between latitudes 40°00' N and 42°00' N and between longitudes 120°15' W and 122°15' W.	
NASA Goldstone Deep Space Communications Complex, Goldstone, CA	80 kilometers (50 mile) radius centered on 35°20' N, 116°53' W.	
National Astronomy and Ionosphere Center, Arecibo, PR	Rectangle between latitudes 17°30' N and 19°00' N and between longitudes 65°10' W and 68°00' W.	
National Radio Astronomy Observatory, Socorro, NM	Rectangle between latitudes 32°30' N and 35°30' N and between longitudes 106°00' W and 109°00' W.	
National Radio Astronomy Observatory, Green Bank, WV	Rectangle between latitudes 37°30' N and 39°15' N and between longitudes 78°30' W and 80°30' W.	
National Radio Astronomy Observatory, Very Long Baseline Array Stations	80 kilometer radius centered on:	
	North latitude	West longitude
Brewster, WA	48°08'	119°41'
Fort Davis, TX	30°38'	103°57'
Hancock, NH	42°56'	71°59'
Kitt Peak, AZ	31°57'	111°37'
Los Alamos, NM	35°47'	106°15'
Mauna Kea, HI	19°48'	155°27'
North Liberty, IA	41°46'	91°34'
Owens Valley, CA	37°14'	118°17'
Pie Town, NM	34°18'	108°07'
Saint Croix, VI	17°45'	64°35'
Owens Valley Radio Observatory, Big Pine, CA	Two contiguous rectangles, one between latitudes 36°00' N and 37°00' N and between longitudes 117°40' W and 118°30' W and the second between latitudes 37°00' N and 38°00' N and between longitudes 118°00' W and 118°50' W.	

(a) In the bands 1350–1400 MHz and 4950–4990 MHz, every practicable effort will be made to avoid the assignment of frequencies to stations in the fixed and mobile services that could interfere with radio astronomy observations within the geographic areas given above. In addition, every practicable effort will be made to avoid assignment of frequencies in these bands to stations in the aeronautical mobile service which operate outside of those geographic areas, but which may cause harmful interference to the listed observatories. Should such assignments result in harmful interference to these observatories, the situation will be remedied to the extent practicable.

(b) In the band 2655–2690 MHz, for radio astronomy observations performed at the locations listed above, licensees are urged to coordinate their systems through the National Science Foundation, Division of Astronomical Sciences, Electromagnetic Spectrum Management Unit, 2415 Eisenhower Avenue, Alexandria, VA 22314; Email: esm@nsf.gov.

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Non-Federal Government (NG)

Footnotes

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NG159 In the band 698–806 MHz, stations authorized under 47 CFR part 74, subparts F and G may continue to operate indefinitely on a secondary basis to all other stations operating in that band.

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Federal Government (G) Footnotes

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G132 Use of the radionavigation-satellite service in the band 1215–1240 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under ITU Radio Regulation No. 5.331. Furthermore, the use of the radionavigation-satellite service in the band 1215–1240 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. ITU Radio Regulation No. 5.43 shall not apply in respect of the radiolocation service. ITU Resolution 608 (Rev.WRC–15) shall apply.

* * * * *

■ 10. Section 2.107 is amended by revising paragraph (a) to read as follows:

§ 2.107 Radio astronomy station notification.

(a) Pursuant to No. 11.12 of Article 11 to the Radio Regulations, operators of radio astronomy stations desiring international recognition of their use of specific radio astronomy frequencies for reception, should file the following information with the Commission for inclusion in the Master International Frequency Register:

(1) The characteristics of radio astronomy stations specified in Annex 2 of Appendix 4 to the Radio Regulations.

(2) The name, mailing address, and email of the operator.

* * * * *

■ 11. Section 2.1091 is amended by revising paragraph (c)(2) to read as follows:

§ 2.1091 Radiofrequency radiation exposure evaluation: Mobile devices.

* * * * *

(c) * * *

(2) Unlicensed personal communications service devices, unlicensed millimeter-wave devices, and unlicensed NII devices authorized under §§ 15.255(f), 15.257(g), 15.319(i), and 15.407(f) of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in § 2.1093(b) requiring evaluation under the provisions of that section.

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■ 12. Section 2.1093 is amended by revising paragraph (c)(1) to read as follows:

§ 2.1093 Radiofrequency radiation exposure evaluation: Portable devices.

* * * * *

(c)(1) Portable devices that operate in the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Service (PCS) pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Upper

Microwave Flexible Use Service pursuant to part 30 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, the 4.9 GHz Band Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; the Wireless Medical Telemetry Service (WMTS), the Medical Device Radiocommunication Service (MedRadio), and the 76–81 GHz Band Radar Service pursuant to subparts H, I, and M of part 95 of this chapter, respectively; unlicensed personal communication service, unlicensed NII devices and millimeter-wave devices authorized under §§ 15.255(f), 15.257(g), 15.319(i), and 15.407(f) of this chapter; and the Citizens Broadband Radio Service pursuant to part 96 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use.

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PART 15—RADIO FREQUENCY DEVICES

■ 13. The authority citation for part 15 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 304, 307, 336, 544a, and 549.

■ 14. Section 15.510 is amended by revising the section heading to read as follows:

§ 15.510 Technical requirements for through-wall imaging systems.

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PART 18—INDUSTRIAL, SCIENTIFIC, AND MEDICAL EQUIPMENT

■ 15. The authority citation for part 18 is revised to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 304, 307.

■ 16. Section 18.301 is revised to read as follows:

§ 18.301 Operating frequencies.

ISM equipment may be operated on any frequency above 9 kHz except as indicated in § 18.303. The following frequency bands, in accordance with § 2.106 of the rules, are designated for use by ISM equipment:

TABLE 1 TO § 18.301

ISM frequency	Tolerance
6.78 MHz	± 15.0 kHz
13.56 MHz	± 7.0 kHz
27.12 MHz	± 163.0 kHz
40.68 MHz	± 20.0 kHz
915 MHz	± 13.0 MHz
2450 MHz	± 50.0 MHz
5800 MHz	± 75.0 MHz
24.125 GHz	± 125.0 MHz
61.25 GHz	± 250.0 MHz
122.50 GHz	± 500.0 MHz
245.00 GHz	± 1.0 GHz

PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

■ 17. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

■ 18. Section 27.1321 is amended by revising paragraph (b) to read as follows:

§ 27.1321 Requirements for operation of base and fixed stations in the 600 MHz downlink band in close proximity to Radio Astronomy Observatories.

* * * * *

(b) 600 MHz band base and fixed stations in the 600 MHz downlink band within 25 kilometers of VLBA observatories are subject to coordination with the National Science Foundation (NSF) prior to commencing operations. The appropriate NSF contact point to initiate coordination is: Division of Astronomical Sciences, Electromagnetic Spectrum Management Unit, 2415 Eisenhower Avenue, Alexandria, VA 22314; Email: *esm@nsf.gov*.

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PART 95—PERSONAL RADIO SERVICES

■ 19. The authority citation for part 95 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 307.

■ 20. Section 95.2309 is amended by revising paragraph (f)(3) to read as follows:

§ 95.2309 WMTS frequency coordination.

* * * * *

(f) * * *

(3) The National Science Foundation (NSF) point of contact for coordination is: Division of Astronomical Sciences, Electromagnetic Spectrum Management Unit, 2415 Eisenhower Avenue, Alexandria, VA 22314; Email: *esm@nsf.gov*.

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