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**LEGAL SERVICES CORPORATION**

Appropriations and Audit Committee Meeting.

**TIME AND DATE:** It will commence at 2:00 P.M. and continue until all official business is completed; Friday, January 27, 1984.

**PLACE:** General Services Administration, Central Office Auditorium, 18th and "F" Streets, NW., Washington, D.C.

**STATUS OF MEETING:** Open.

**MATTERS TO BE CONSIDERED:**

1. Approval of Agenda
2. Approval of Draft Minutes of July 20, 1983 Appropriations and Audit Committee Meeting
3. Presentation of Corporation Audit for Fiscal Year 1983/Acceptance
4. Final Fiscal Year 1983 consolidated Operating Budget—Staff Report
5. Board Allocation of Fiscal Year 1983 Carryover Funds
6. Proposed Fiscal Year 1984 Consolidated Operating Budget Including Carryover
7. Staff Report on Selection of Auditor

**CONTACT PERSON FOR MORE**

**INFORMATION:** Lea Anne Bernstein, Office of the President, (202) 272-4040

Date Issued: January 17, 1984.

Donald P. Bogard,

President.

[FR Doc. 84-1690 Filed 1-17-84; 3:43 pm]

**BILLING CODE 6820-35**

10

**NATIONAL COUNCIL ON THE HANDICAPPED****TIME AND DATE:**

9:00 a.m.—5:00 p.m., February 1, 1984  
9:00 a.m.—5:00 p.m., February 2, 1984  
9:00 a.m.—12:00 p.m., February 3, 1984

**PLACE:** La Bodega Room, Biltmore Hotel, 1260 Channel Drive, Santa Barbara, CA 93108.

**STATUS:** Open Meeting.

**MATTERS TO BE CONSIDERED:**

General Business including:  
Approval of minutes  
Input from consumers/policy issues  
Annual Report  
Program Review Reports  
1984 NCH Goals  
Presentations:  
Little People of America  
Robotics by Odetics, Inc.  
Media Presentation on Realities of Disability

**PLEASE NOTE:** Any person requiring an interpreter or other special services, please contact NCH Staff no later than January 25, 1984.

**CONTACT FOR MORE INFORMATION:**

Harvey C. Hirschi, Executive Director, NCH, 202-245-0752.

Harvey C. Hirschi,  
*Ex. Director, National Council on the Handicapped.*

[FR Doc. 84-1671 Filed 1-17-84; 2:04 pm]

**BILLING CODE 4000-01-M**

11

**NUCLEAR REGULATORY COMMISSION**

**DATE:** Week of January 16, 1984 (Revised) and Week of January 23, 1984.

**PLACE:** Commissioners' Conference Room, 1717 H Street, N.W., Washington, D.C.

**STATUS:** Open and Closed.

**MATTER TO BE DISCUSSED:**

*Week of January 16*

*Monday, January 16*

10:00 a.m.

Discussion of Corrosion in PORV's at TMI-1 (Public Meeting) (As Announced)

2:00 p.m.

Discussion of Future Steps in TMI-1 Restart (Closed—Ex. 5 & 10) (As Announced)

*Thursday, January 19*

3:30 p.m.

Affirmation/Discussion and Vote (Public Meeting) (New Item)  
a. Policy Statement on Regionalization (Tentative)

b. NRC Response to Court Decision Vacating Interim Rule on Environmental Qualification Deadline (Tentative) (Postponed from January 12)

*Week of January 23*

*Monday, January 23*

1:30 p.m.

Affirmation/Discussion and Vote (Public Meeting)  
a. Modification of Commission Memorandum and Order Regarding Operation of Diablo Canyon Nuclear Power Plant

1:40 p.m.

Discussion of Pending Investigations on Diablo Canyon (Open/Closed—Ex. 5 & 7)

*Thursday, January 26*

2:00 p.m.

Status of Certain Enforcement Actions (Closed—Ex. 5 & 7)

3:30 p.m.

Affirmation/Discussion and Vote (Public Meeting)  
a. Modification of Commission Memorandum and Order Regarding Operation of Diablo Canyon Nuclear Power Plant (if necessary)

*Friday, January 27*

9:30 a.m.

Briefing on Possible Uses of Special Nuclear Material Available in the Non-Power Reactor Community (Closed—Ex. 1)

11:15 a.m.

Comments on Implications of a Proposed Rule Regarding Use of HEU in Domestic Research Reactors (Public Meeting)

2:00 p.m.

Discussion of International Implications of Conversion of Domestic Research Reactors to LEU Use (Open/Closed to be determined)

3:30 p.m.

Discussion of Physical Security at Domestic Research Reactors (Closed—Ex. 1)

**ADDITIONAL INFORMATION:** Briefing on BWR Pipe Replacement held on January 12 (title change). Steam Generator Generic Requirements scheduled for Friday, January 13, *Postponed*. Comments by Parties on Diablo Canyon Criticality and Low Power Operation scheduled for January 17, *postponed*. Discussion of Pending Investigations scheduled for January 17, *postponed*.

**TO VERIFY THE STATUS OF MEETINGS**

**CALL:** (Recording)—(202) 634-1498.

**CONTACT PERSON FOR MORE**

**INFORMATION:** Walter Magee (202) 634-1410.

Dated: January 12, 1984.

Walter Magee,

Office of the Secretary.

[FR Doc. 84-1699 Filed 1-17-84; 3:54 pm]

**BILLING CODE 7590-01-M**

12

**POSTAL SERVICE**

Notice of Vote to Close Meeting.

At its meeting on January 9-10, 1984, the Board of Governors of the United States Postal Service unanimously voted to close to public observation its meeting, scheduled for February 8, 1984, in Los Angeles, CA. The meeting will involve a discussion of possible strategies in anticipated collective bargaining negotiations, pursuant to chapter 12 title 39 United States Code, involving parties to the 1981 National Agreements, between the Postal Service and four labor organizations representing certain postal employees, which are scheduled to expire in July 1984.

The meeting is expected to be attended by the following persons: Governors Babcock, Camp, McKean, Peters, Ryan, Sullivan, Voss and Waldman; Postmaster General Bolger; Deputy Postmaster General Finch; Secretary of the Board Harris; General Counsel Cox; Senior Assistant Postmaster General Morris; and Counsel to the Governors Califano.

The Board is of the opinion that public access to any discussion of possible strategies that Postal Service management may decide to adopt, or the



positions it may decide to assert, in any collective bargaining sessions that may take place would be likely to frustrate action to carry out those strategies or assert those positions successfully. In making this determination, the Board is aware that the effectiveness of the collective bargaining process in labor-management relations has traditionally depended on the ability of the parties to prepare strategies and formulate positions without prematurely disclosing them to the opposite party. The public has a particular interest in the integrity of this process as it relates to the Postal Service, since the outcome of the negotiations between the Postal Service and the various postal unions, and consequently the cost, quality and efficiency of postal operations, may be adversely affected if the process is altered.

Accordingly, the Board of Governors has determined that, pursuant to section 552b(c)(3) of title 5, United States Code, and § 7.3(c) of title 39, Code of Federal Regulations, this portion of the meeting is exempt from the open meeting requirement of the Government in the Sunshine Act (5 U.S.C. 552(b)), because it is likely to disclose information prepared for use in connection with the negotiation of collective bargaining agreements under chapter 12 of title 39, United States Code, which is specifically exempted from disclosure by section 410(c)(3) of title 39, United States Code. The Board has determined further that, pursuant to section 552b(c)(9)(B) of title 5, United States Code, and § 7.3(i) of title 39, Code of Federal Regulations, the discussion is exempt, because it is likely to disclose information the premature disclosure of which is likely to frustrate significantly proposed Postal Service action. Finally, the Board of Governors has determined that the public has an interest in maintaining the integrity of the collective bargaining process and that the public interest does not require that the Board's discussion of its possible collective bargaining strategies and positions be open to the public.

In accordance with section 552b(f)(1) of title 5, United States Code, and § 7.6(a) of title 39, Code of Federal

Regulations, the General Counsel of the United States Postal Service has certified that in his opinion the meeting to be closed may properly be closed to public observation, pursuant to section 552b(c)(3), and (9)(B) of title 5 and section 410(c)(3) of title 39, United States Code, and section 7.3(c), and (i) of title 39, Code of Federal Regulations.

David F. Harris,  
Secretary.

[FR Doc. 84-1444 Filed 1-17-84; 10:32 am]  
BILLING CODE 7710-12-M

### 13

#### SECURITIES AND EXCHANGE COMMISSION

Notice is hereby given, pursuant to the provisions of the Government in the Sunshine Act, Pub. L. 94-409, that the Securities and Exchange Commission will hold the following meeting during the week of January 23, 1984, at 450 Fifth Street, NW., Washington, D.C.

A closed meeting will be held on Tuesday, January 24, 1984, at 9:30 a.m.

The Commissioners, Counsel to the Commissioners, the Secretary of the Commission, and recording secretaries will attend the closed meeting. Certain staff members who are responsible for the calendared matters may be present.

The General Counsel of the Commission, or his designee, has certified that, in his opinion, the items to be considered at the closed meeting may be considered pursuant to one or more of the exemptions set forth in 5 U.S.C. 552b(c) (4), (8), (9)(A) and (10) and 17 CFR 200.402(a) (4), (8), (9)(i) and (10).

Chairman Shad and Commissioners Longstreth, Treadway and Cox voted to consider the items listed for the closed meeting in closed session.

The subject matter of the closed meeting scheduled for Tuesday, January 24, 1984, 9:30 a.m., will be:

Settlement of administrative proceedings of an enforcement nature.  
Institution of injunctive actions.  
Formal orders of investigation.  
Settlement of injunctive action.  
Litigation matter.  
Institution of administrative proceeding of an enforcement nature.

#### AT TIMES CHANGES IN COMMISSION PRIORITIES REQUIRE ALTERATIONS IN THE

**SCHEDULING OF MEETING ITEMS. FOR FURTHER INFORMATION AND TO ASCERTAIN WHAT, IF ANY, MATTERS HAVE BEEN ADDED, DELETED OR POSTPONED, PLEASE CONTACT: Bruce Kohn at (202) 272-3195.**

George A. Fitzsimmons,  
Secretary.

January 13, 1984.  
[FR Doc. 84-1538 Filed 1-17-84; 9:31 am]  
BILLING CODE 8010-01-M

### 14

#### SECURITIES AND EXCHANGE COMMISSION

**FEDERAL REGISTER CITATION OF PREVIOUS ANNOUNCEMENTS:** (To be published).

**STATUS:** Closed meeting.

**PLACE:** 450 Fifth Street, NW., Washington, D.C.

**DATE PREVIOUSLY ANNOUNCED:** Tuesday, January 10, 1984.

**CHANGE IN THE MEETING:** Additional items.

The following items will be considered at a closed meeting scheduled for Tuesday, January 17, 1984, following the 9:30 a.m. open meeting.

Settlement of injunctive action and institution of administrative proceeding of an enforcement nature.  
Regulatory matter regarding financial institution.

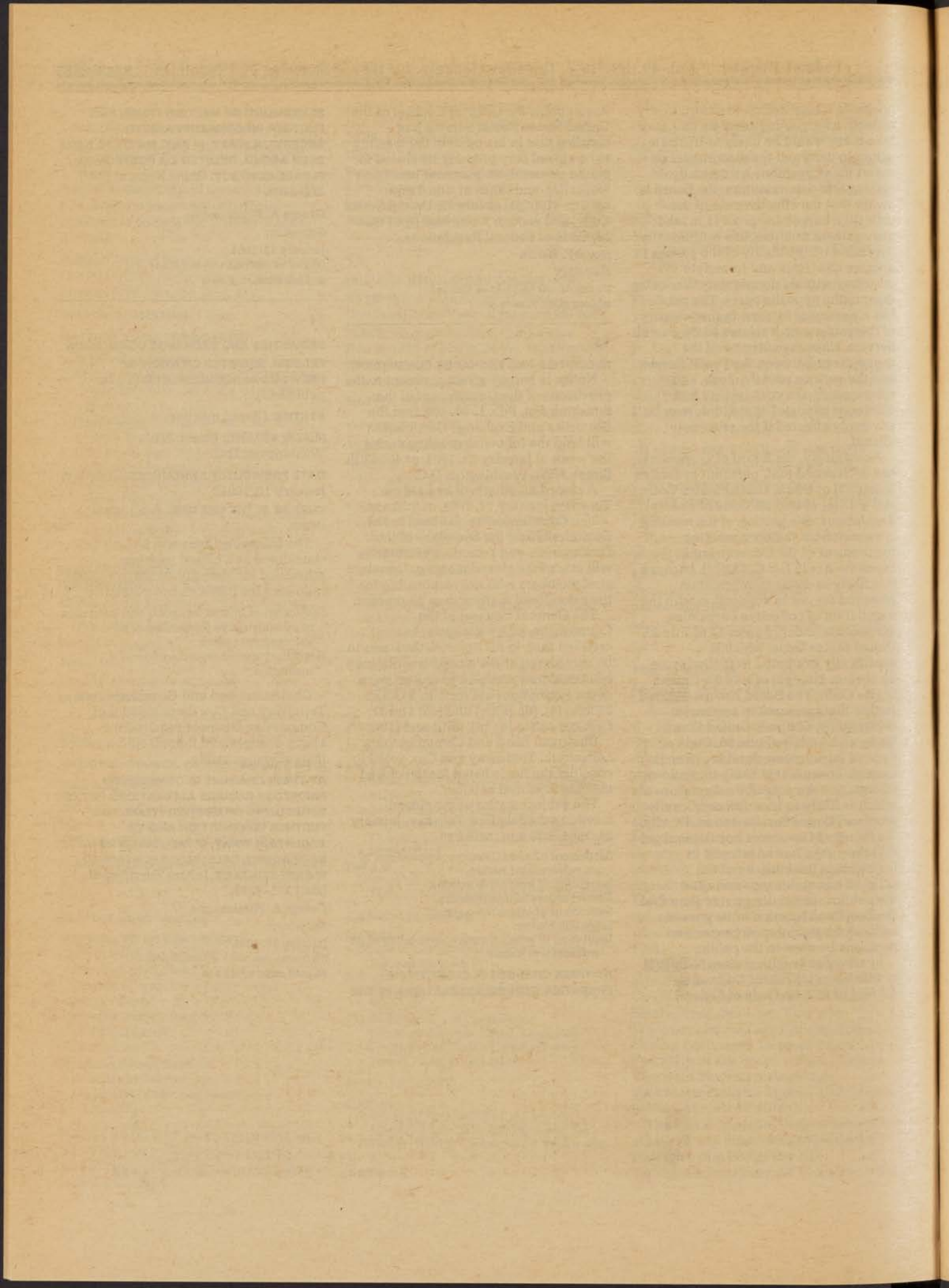
Chairman Shad and Commissioners Treadway and Cox determined that Commission business required the above changes and that no earlier notice thereof was possible.

**AT TIMES CHANGES IN COMMISSION PRIORITIES REQUIRE ALTERATIONS IN THE SCHEDULING OF MEETING ITEMS. FOR FURTHER INFORMATION AND TO ASCERTAIN WHAT, IF ANY, MATTERS HAVE BEEN ADDED, DELETED OR POSTPONED, PLEASE CONTACT: JoAnn Zuercher at (202) 272-2014.**

George A. Fitzsimmons,  
Secretary.

January 16, 1984.  
[FR Doc. 84-1643 Filed 1-17-84; 1:30 pm]  
BILLING CODE 8010-01-M





# Part 1

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Thursday  
January 19, 1984

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## Part II

### Federal Communications Commission

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#### 47 CFR Part 2

Implementation of the Final Acts of the  
World Administrative Radio Conference,  
Geneva, 1979; Final Rule (2nd Report  
and Order)



## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 2

[Gen. Docket No. 80-739; FCC 83-511]

#### Implementation of the Final Acts of the World Administrative Radio Conference, Geneva, 1979

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule (2nd Report and Order).

**SUMMARY:** The Federal Communications Commission amends Part 2 of its Rules to implement domestically the Final Acts of the 1979 World Administrative Radio Conference. This action brings the Commission's Rules into conformity with international regulations. This provides domestic radio spectrum users with protection from harmful interference as provided by international regulations.

**EFFECTIVE DATE:** February 21, 1984.

**ADDRESS:** Federal Communications Commissions, 2025 "M" Street NW., Washington, D.C. 20554.

**FOR FURTHER INFORMATION CONTACT:** Mr. Fred Thomas/Mr. William Torak, Office of Science and Technology, 2025 "M" Street NW., Washington, D.C. 20554, (202) 653-8171/(202) 632-7025.

#### List of Subjects in 47 CFR Part 2

Frequency allocations, Treaties, Radio.

#### Second Report and Order

In the matter of amendment of Part 2 of the Commission's Rules regarding implementation of the final acts of the World Administrative Radio Conference, Geneva, 1979.

Adopted: November 8, 1983.

Released: December 8, 1983.

By the Commission: Commissioner Rivera absent.

#### Purpose

1. The purpose of this proceeding is to implement into Part 2 of the Commission's Rules and Regulations the Final Acts of the 1979 World Administrative Radio Conference (1979 WARC). This is necessary as the Final Acts of the 1979 WARC, which comprise an international treaty, became effective internationally on January 1, 1982, for administrations that have ratified the treaty. The United States ratified the treaty on September 6, 1983. Therefore, it now has the force of law in the United States and we are obliged to adhere to its provisions. Further, we take this opportunity to modify the format of § 2.106, Table of Frequency Allocations,

to remove obsolete and outdated provisions from Part 2 of the Commission's Rules and to ensure that Part 2 is consistent with rules recently adopted in other proceedings.

#### Background

2. The 1973 Plenipotentiary Conference of the International Telecommunication Union (ITU) resolved that a World Administrative Radio Conference (WARC) should be convened in 1979 to revise, as necessary, the international Radio Regulations. The ITU Plenipotentiary noted that since 1959, the year of the last such general revision, various world administrative radio conferences had amended the Radio Regulations on specific points without having been able to harmonize the decisions taken because of the limited nature of their agendas. It also noted that as a result of technical advances, some of the Radio Regulations needed reconsideration. The Administrative Council of the ITU issued an initial agenda for the 1979 WARC in 1976. The 1979 WARC began on September 24, 1979 and concluded on December 6, 1979; of the then 154 member nations of the ITU, 150 were represented at the Conference. The Conference considered more than 15,000 individual proposals dealing with numerous aspects of world telecommunications.

3. The Commission's effort in preparation for the 1979 WARC began in late 1974 when an FCC Steering Committee, having overall management responsibility, and four specialized functional committees were established. Also, twenty-two industry advisory committees were created, each representing a particular radio service, in order to study spectrum requirements and to suggest appropriate changes to the Radio Regulations.

4. At about the same time, the National Telecommunications and Information Administration (NTIA), which at the time was the Office of Telecommunications Policy under the Executive Office of the President, established a preparatory infrastructure within the Interdepartment Radio Advisory Committee (IRAC) that was analogous to that of the Commission's. Throughout the preparation, coordination between the FCC and the Executive Branch took place.

5. In 1975, the Commission instituted a public proceeding, Docket 20271, which served as the vehicle by which comments and recommendations were obtained from the public regarding the proposals that the United States would make to the Conference. Nine Notices of Inquiry were issued between 1975 and

1978; of those, three were concerned primarily with the development of proposals for changes to the international Table of Frequency Allocations.<sup>1</sup>

6. Throughout the preparation period, many parties, which represented diverse interests and perspectives, contributed to the development of proposals by participating in the advisory committees and by responding to the Notices of Inquiry. A Report and Order (FCC 78-849, 44 FR 2683), which contained a comprehensive set of recommended proposals representing the combined thinking of the Commission and the Executive Branch, was issued in December 1978. The Department of State used those recommended proposals to develop the formal U.S. proposals that were submitted to the ITU for consideration by the 1979 WARC.

7. Of the more than 15,000 proposals considered by the 1979 WARC, over 900 had been submitted by the United States. Most of the U.S. proposals were attained, either in entirety or in substantial part. In January of 1980, we released a Public Notice (No. 25215) that reported general results of the 1979 WARC.

8. The Commission prepared for national implementation of the Final Acts by issuing five Notices of Inquiry (NOIs) and a Notice of Proposed Rule Making (NPRM).<sup>2</sup> These Inquiries and

<sup>1</sup> The Third Notice of Inquiry (FCC 76-1099, 41 FR 54309), Fifth Notice of Inquiry (FCC 77-349, 42 FR 27756) and Eight Notice of Inquiry (FCC 78-265, 43 FR 18748) solicited comments, and treated comments, regarding a revised international Table of Frequency Allocations.

<sup>2</sup> The First Notice of Inquiry was adopted by the Commission on November 25, 1980 (FCC 80-695, 46 FR 3060) and released on December 30, 1980. It proposed modifications to §§ 2.100 through 2.105, § 2.106 (Table of Frequency Allocations) up through 28 MHz, and the addition of § 2.107. The Second Notice of Inquiry was adopted by the Commission on May 21, 1981 (FCC 81-247, 46 FR 31693) and released on June 15, 1981. It proposed modifications to § 2.106 from 28 MHz through 1215 MHz. The Third Notice of Inquiry was adopted by the Commission on July 16, 1981 (FCC 81-323, 46 FR 40536) and released on August 7, 1981. It proposed modifications to § 2.1 (Definitions) and to § 2.106 from 1215 MHz through 40.5 GHz. The Fourth Notice of Inquiry was adopted by the Commission on October 1, 1981 (FCC 81-457, 46 FR 60221) and released on October 16, 1981. It proposed modifications to § 2.106, from 40.5 GHz through 400 GHz, and to Subpart C of Part 2, the Emission Designators. The Fifth Notice of Inquiry was adopted by the Commission on May 13, 1982 (FCC 82-213, 47 FR 25982) and released on June 7, 1982. The Notice of Proposed Rule Making was adopted by the Commission on November 18, 1982 (FCC 82-508, 48 FR 3790) and released December 30, 1982. It proposed modifications to Part 2 Subparts A and B (§§ 2.1 through 2.108).



the NPRM solicited public comment on proposed modifications to Part 2 of the Rules that we felt were necessary and appropriate to make Part 2 as consistent as possible with the Final Acts and to satisfy our domestic allocation needs. This Second Report and Order is limited in scope to the issues addressed in the NPRM with the exception of the band 11.7-12.2 GHz, which was addressed in the First Report and Order in this proceeding.<sup>3</sup> Further notices of proposed rule making and reports and orders will be issued to cover the implementation of remaining relevant provisions of the Final Acts of the 1979 WARC.

9. Parties filing Comments and Reply Comments to the Notice of Proposed Rule Making are listed in Appendix A.<sup>4</sup>

#### Intentions

10. The international treaty has the force of law in the United States, and we are obliged to adhere to its provisions. In our domestic implementation actions, we must take full account of the international provisions even though in some instances they do not fully agree with those that the United States had proposed. The treaty does provide some flexibility, however, through Radio Regulation No. 342 that states:

Administrations of the Members shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and these Regulations.

This enables the enactment of domestic provisions different from international provisions in cases where the physical characteristics of the radio spectrum and of the domestic uses permit operations within the stated interference constraint. In a few instances, the United States had serious reservations about the allocation actions taken by the 1979 WARC. Therefore, the U.S. delegation made protocol statements which said the U.S. would not accept certain decisions of the Conference and which further stated the U.S. intentions in regard to those decisions; these are shown at Appendix B.

11. In conformity with a specific objective in Conference preparation, a number of the U.S. proposals were

intentionally drawn to provide flexibility in making domestic regulatory decisions and were obtained at the 1979 WARC. In those cases, the Commission, in coordination with NTIA, which is responsible for developing provisions for the Government sector, proposed and discussed appropriate choices in the NOIs and the NPRM in this Docket.

12. In the NOIs and NPRM, the Commission proposed a new format for the Table of Frequency Allocations, § 2.106. We are adopting this new format, which includes for informational purposes the international table of Frequency Allocations for all Regions of the world as well as the domestic allocations observed by the Government sector. The new format also eliminates redundancy in the Table by replacing the columns previously headed "Class of Stations" and "Nature of Service/Station" by a column headed "Rule Part(s)". This new column provides a cross reference to appropriate rule parts that contain the assignments of channels and other specific provisions pertaining to the different services. We also took the opportunity afforded by this general review to perform an overall "clean-up" of Part 2 of our domestic Rules and Regulations. Some of the existing provisions were functionally obsolete and served no useful purpose, while others required up-dating to make them current. The appropriate editorial modifications were discussed in the NOIs and NPRM. Finally, we have included modifications that were recently adopted in separate Commission proceedings. The result is a document which we believe is more simple, clear, accurate and timely. The applications and contents of the Table are described in § 2.105.

#### Discussion

13. We are adopting here essentially all of the revisions to Subpart A (Definitions) and Subpart B (Allocations, Assignments, and Use of Radio Frequencies) of Part 2 of our Rules which we proposed and discussed in the NPRM. However, we are making several appropriate changes as a result of the comments and reply comments received in response to the NPRM. We are also making several editorial changes in Part 2 to incorporate various Commission decisions made after the NPRM was issued. The revised Part 2 is contained in Appendix C. The following discussion will focus on the comments and replies and on other areas where we believe change from our proposal is appropriate.

#### Subpart A

14. Revisions to § 2.1 (Definitions) of the Rules were presented in the Third

NOI and the NPRM. We are modifying our definitions to be consistent with the international definitions approved at the 1979 WARC. We are deleting definitions that are particular to, and contained in, Commission Rule Parts other than Part 2 and definitions that are common terms which can be readily found in dictionaries.

15. We received no comments in response to the NPRM on this section and will therefore adopt § 2.1 as proposed in the NPRM.

#### Subpart B

16. Amendments to Rule §§ 2.100-2.108 were proposed in the NPRM to bring these sections into compliance with the international Radio Regulations. These rule sections address topics such as the nomenclature and assignment of frequencies, government and non-government use of frequencies and the international Table of Frequency Allocations.<sup>5</sup>

17. There were no comments filed addressing §§ 2.100-2.105, 2.107 and 2.108. However, we are editorially modifying proposed § 2.105(d)(5) which addresses column 6 of the Table, "FCC USE DESIGNATORS, RULE PART(S)". We wish to clarify that the entries in this column are not allocations but are cross references to applicable rule parts and are provided for informational purposes only.

18. The following paragraphs will highlight the bands of the Table of Frequency Allocations in § 2.106 for which we receive specific comments in response to the NPRM and the bands which require editorial modification. We have modified the format of the Table as discussed in the NOIs and NPRM. The Table now includes, for informational purposes only, the international and Government allocations. Channelling plans have been removed from the allocation Table but may be found in the operating rules of each service. As discussed above, a cross reference to the applicable rule part(s) is located in column 6 of the Table.

19. In the bands between 10 and 490 kHz AAR requested that footnote US294 (see Appendix C), which identifies the operations of Power Line Carriers and which was adopted by the Commission in Docket 82-9 (released January 27, 1983), be included in the Table. This action in Docket 82-9 was taken by the Commission after the NPRM in the instant proceeding was adopted and, therefore, was not included in the proposal. We have added US294 to the

<sup>3</sup> The First Report and Order in this proceeding was adopted by the Commission on June 2, 1983, (FCC 83-272, 48 FR 27541) and released on June 10, 1983. It addressed the issues of the 11.7-12.2 GHz band.

<sup>4</sup> Parties filing comments to the NPRM will be referred to hereafter by the abbreviations listed after their names in Appendix A.

<sup>5</sup> See Appendix C of the NPRM for a complete listing of the proposed allocations.



revised Table in Appendix C to reflect this decision.

20. With respect to the 535-1605 kHz AM broadcasting band, AT&T requested that footnote NG128 be modified to allow Subsidiary Communications Authorizations (SCA) consistent with action taken in BC Docket 81-896. It requested the footnote be modified to permit AM broadcast licensees or permittees to transmit signals intended for utility load management. We are making the requested change to conform NG128 to the Commission's decision. We are also modifying the footnote to conform it to the Commission's First Report and Order in BC Docket 82-536,<sup>6</sup> broadening the permitted uses of subcarriers by FM broadcast stations. These modifications are incorporated in NG128 in Appendix C.

21. For the 1900-2000 kHz band, the commenters focused on the status of amateur users. The Commission proposed to allocate the band for Government and non-Government radiolocation use on a primary basis and for amateur use on a restrictive secondary basis as set forth in US290 and NG15. Comments were received from ARRL, CHESTER, HUTCHINSON and ONI. Reply Comments were filed by NOIA, ONI and RACAL-DECCA. ARRL, CHESTER, and HUTCHINSON claimed that this band is an important band to the amateur community and that it is imperative that an amateur allocation be maintained. CHESTER requested that amateurs be allowed to continue to operate on a secondary basis when radiolocation operations move into the band. ARRL, however, requested a primary amateur allocation and a secondary radiolocation allocation. ARRL claimed that radiolocation usage in this band is inefficient, that the spectrum requirements of radiolocation may not require the use of this band, particularly if LORAN-C or NAVSTAR navigation systems were used instead, and that a smaller allocation for radiolocation such as the allocation in Region 1 would be more appropriate. ARRL further noted that this band was allocated for amateur use prior to World War II but that the amateurs were preempted to provide spectrum for radionavigation. ARRL went on to argue that, since the radionavigation requirements no longer exist for this band, it should be returned for amateur use.

22. ONI, on the other hand, requested deleting the temporary amateur allocation in US290 (see Appendix C) to

provide an exclusive allocation to the radiolocation service in the 1900-2000 kHz band. In the alternative, it requests at least modifying US290 to provide for a cut-off date of amateur operations once radiolocation operations begin in the band. It claimed that radiolocation operations will commence as soon as implementing rules are adopted, as the band is needed by radiolocation and current equipment can be tuned or easily modified to operate in this band. RACAL-DECCA supported this argument in its reply comments noting that it too is prepared to make use of this band once this rule making is completed. ONI went on to argue that amateur operations will be incompatible with radiolocation in this band and that there will be little opportunity for amateurs to use this band before the commencement of radiolocation operations.

23. In their reply comments NOIA, ONI and RACAL-DECCA refuted the claims made by ARRL. They claimed: (1) that radiolocation requirements have been increasing over the years and that this is well documented, (2) that radiolocation operations, due to improved engineering, have become increasingly efficient over the years, (3) that the radiolocation users' requirements for precision are greater than can be satisfied by existing navigation systems such as LORAN-C and NAVSTAR, (4) that the spectrum requirements for Region 1 are not analogous to the requirements of the United States and (5) that the spectrum needs of the United States prior to World War II are wholly irrelevant to the spectrum needs of the United States for the 1980's and 1990's. They further claimed that the proposed allocation of 100 kHz on an exclusive basis for both services represents a valid balancing of competing interests and provides the most efficient means of operation for both services, allowing maximum spectrum utilization and efficiency.

24. The purpose of allocating this band to the radiolocation service was to provide reaccommodation spectrum for radiolocation users that will have to move out of the 1605-1705 kHz band when AM broadcasting is implemented in that band. This is still a valid requirement and, therefore, we will adopt the primary radiolocation allocation that was proposed in the NPRM. However, as this allocation was made for reaccommodation purposes and not to provide additional spectrum for radiolocation needs and because this reaccommodation process should take a number of years, we feel that the amateurs can still make some use of the

band for the near term without causing interference to radiolocation users. Finally, it is noted that the proposed amateur allocation is secondary and should provide adequate protection to the radiolocation service upon commencement of its operations. Therefore, we are also maintaining US290 as proposed.

25. As highlighted in the NPRM, we also were to re-evaluate the need to maintain NG15 in the 1900-2000 kHz band to protect continuing Region 2 LORAN-A operations. We have made the re-evaluation and found it is necessary to retain this footnote at least through January 1, 1984.

26. In the 10,100-10,150 kHz band, we included in the NPRM footnote US295, which was adopted by Order of the Commission on October 28, 1982 in RM-3855 (FCC 82-469). The footnote was provided to permit amateur use of the band on a secondary basis pending adoption of this Report and Order. Since this item provides for amateur operations on a primary basis in the 10,100-10,150 kHz band, the footnote is no longer necessary and has been deleted.

27. With respect to the 27.54-28.0 MHz band, which is allocated for Government fixed and mobile use on a primary basis, FIT requested a footnote to reflect non-Government use of certain frequencies on a secondary basis to government operations. This would reflect an IRAC agreement that allows FIT members access to this band. Its suggested text is as follows:

NG——. Channels 27555, 27615, 27635, 27655, 27765, and 27860 KHz are available to eligibles in the Forest Products Radio Service on a secondary basis to Government operations including experimental stations. Operations in the Forest Products Radio Service on these channels will not exceed 150 watts and are limited to the states of Washington, Oregon, Maine, North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas (eastern portion).

While all non-Government use of this band will continue to be coordinated through existing IRAC procedures, we believe the suggestion of FIT has merit. We will therefore adopt the footnote US298 to recognize this non-Government use.

28. The bands between 157.45 MHz and 162.0125 MHz were proposed for land mobile and maritime mobile use, and the 928-929 MHz, 947-960 MHz, and 2110-2200 MHz bands were proposed for fixed use. AAR is concerned that these bands are also specifically being allocated to the Domestic Public Land Mobile Service (DPLMS) because this

<sup>6</sup>The Commission adopted a Report and Order in BC Docket 82-536 on April 7, 1983 which was released May 19, 1983 (FCC 83-154, 48 FR 29445).



use is reflected in column 6 of the Table. However, column 6, like column 7 of the Table, is not an allocation. It provides a cross reference to applicable portions of the operating rules and identifies existing uses of the bands. For example, DPLMS (Part 22) use of the bands between 157.45 MHz and 162.0125 MHz is provided by § 22.601 of the Rules, which is why it is cross referenced in column 6. Therefore, there is no need to modify the Table.

29. The 216-220 MHz band, which had previously been limited to telemetry and radiolocation uses, was recently allocated to primary maritime mobile use with previous users retained generally on a secondary basis. However, maritime mobile use was restricted geographically by footnote NG121, which we proposed to retain. WATERCOM requested that footnote NG121 be deleted to allow broader maritime mobile operation. WATERCOM noted that the Commission is considering this issue in General Docket 81-822. However, Docket 81-822 was concluded by a Report and Order adopted by the Commission on April 14, 1982 (FCC 82-175, 47 FR 18881), which expanded the original operating area permitted by NG121 by addition of the Gulf Intracoastal Waterways. A further separate proceeding would have to be initiated to address the removal of NG121 as requested by WATERCOM, as this issue is outside the scope of this proceeding.

30. For the 220-225 MHz band, we proposed shared Government/non-Government primary fixed and mobile, Government secondary radiolocation and non-Government primary amateur use. Previously, the only authorized non-Government use was amateur, which was secondary to the government radiolocation service. MOTOROLA supported the allocation proposed in the NPRM. MOTOROLA argued that the proposed allocation provides the Commission flexibility to reconsider the best use of this band. ARRL, on the other hand, requested that the primary non-Government fixed and mobile allocations be deleted. ARRL claimed the band is needed by the amateur community, especially if Commission action in Docket 83-28 establishes a codeless class of amateur license. ARRL was, however, not opposed to some Government use of the band.

31. The spectrum requirements for this band are currently undefined. However, as noted in the NPRM there is an FCC/NTIA working group developing an allocation plan for this band. Therefore, we will maintain all three allocations—

amateur, fixed and mobile—pending the results of this effort. It is noted that no assignments will be made to the fixed and mobile services until the allocation and service rules are finalized.

32. For the 420-430 MHz band, which we proposed for Government primary radiolocation use and non-Government secondary amateur use, we also proposed adding footnote NG135 to the Table to protect Canadian fixed and mobile operations from interference by U.S. amateur operations. Amateurs could not operate north of Line A as defined in § 2.1 of our Rules without a waiver. ARRL recognized the Commission's responsibility to protect Canadian operations from harmful interference but suggested that the Commission mechanism for processing of waivers filed by amateur licensees to operate within Line A should be streamlined as much as possible. Waivers will be considered based on appropriate technical considerations. Due to treaty obligations, such waivers must be subject to successful prior coordination with the Canadian Administration. ARRL's concern is noted but is inappropriate for consideration in this proceeding.

33. The 470-512 MHz band is allocated for UHF television broadcasting and land mobile use on a coequal primary basis. However, the land mobile allocation is restricted to certain television channels by footnote NG66 (see Appendix C). CPOA requested that this allocation be expanded to encompass the entire band. It claimed that this would alleviate some of the current congestion experienced by public safety users. In their reply comments LA COUNTY and LA SHERIFF requested that television channels in this band be reallocated for land mobile use. They noted the LA SHERIFF's petition (RM-3975), which requests the reallocation of television channels 15 and 16 in the Los Angeles area for safety of life operations. This issue is beyond the scope of the rulemaking proposals in the instant proceeding. It must be addressed in a separate proceeding such as RM-3975.

34. The 512-608 MHz and 614-806 MHz bands are also allocated for UHF television broadcasting on a primary basis. In the NPRM we proposed to allow fixed and mobile use on a secondary basis. We received 23 comments and 9 reply comments. With the exception of M/A-COM they may be categorized as follows: those with land mobile interest (API, FIT, IAFC, LA COUNTY, LA SHERIFF, LMCC, MOTOROLA, NABER, SIRSA, UTC, CPOA and CPRA) and those with

broadcasting interest (ALPTA & NILPT, AMST, CBS, CPB, COSMOS, CUB, COX, INTV, NAB, NAPTS, NBC, NUBA and SPRINGFIELD). M/A-COM's comments in these bands supported the proposed fixed and mobile secondary allocation but for reasons other than land mobile use. It claimed that these bands would be suitable for low power mobile video transmitters for electronic newsgathering operations and noted that such operations currently exist in other countries.

35. Those with land mobile interest requested that the Commission allocate these bands on co-equal primary basis among the broadcasting, fixed and mobile services. They jointly claimed that the flexibility attained in these bands at the 1979 WARC should be preserved by providing a domestic primary co-equal allocation for land mobile and that anything less would be a departure from the U.S. position at the '79 WARC. Noting the projected land mobile spectrum requirements in the Private Radio Bureau's Interim Report of Future Land Mobile Telecommunication Requirements released in PR Docket 82-10,<sup>7</sup> they claimed the bands were needed to meet future land mobile spectrum requirements. Further, they claimed that failure to accord the mobile service a primary allocation would result in unrestrained broadcast growth, particularly by low power television, and this would effectively preclude any non-broadcast use of the band and eclipse the flexibility obtained at the 1979 WARC. API also noted that sharing between the land mobile and broadcasting services has been done successfully for a number of years in the 470-512 MHz bands and that it could be done successfully in this band as well.

36. Those with broadcasting interest, in both comments and reply comments, requested that the secondary fixed and mobile allocations be deleted from the Table. They claimed that domestic fixed and mobile allocations were not required by the 1979 WARC Final Acts and are not necessary to maintain the flexibility provided by the Final Acts. They noted the report by Dale N. Hatfield Associates, "The Role of New Technologies and Spectrum Management in Meeting the Demand for Private Land Mobile Radio Telecommunications Capacity" (Hatfield Report), November 18, 1982,

<sup>7</sup>PR Docket 82-10, "Interim Report on Future Private Land Mobile Telecommunications Requirements," was released on September 20, 1982 in FCC Public Notice 6576. The Private Radio Bureau's final report, "Future Private Land Mobile Telecommunications Requirements" was released September 16, 1983.



and claimed that additional allocations for land mobile are not necessary as its foreseeable spectrum requirements can be met by the present and "reserve" allocations if highly spectrum-efficient technologies, such as cellular and amplitude companded systems, are used. They also argued that the proposed sharing would actually amount to a reallocation to the land mobile service as broadcast use of the band would be pre-empted. Further, they argued that the band is needed for broadcasting because of the growing requirement for conventional UHF television and the high demand for new low power broadcasting facilities.

37. In their reply comments those with land mobile interest objected to the characterization that sharing these bands would be a reallocation. They claimed that geographic sharing would allow both services to use this portion of the spectrum and would make efficient use of this scarce resource by using frequencies that now lie fallow. With regard to land mobile spectrum needs and the Hatfield Report, they argued that the land mobile community is now taking advantage of spectrum saving technologies and will continue to introduce new technologies as they develop. However, they claimed that some of the new technologies discussed in the Hatfield Report are still in a developmental stage and others will not provide the type of service that land mobile users require. Therefore, they argued access to additional spectrum will still be required and that these bands are the most likely source of spectrum to satisfy this need.

38. There were comments from both those with land mobile interest and those with broadcast interest that requested this issue be resolved in PR Docket 82-10, where they claimed all of the pro and cons of reallocating this band may be fully considered.

39. We believe that it would be premature to resolve this issue before the results of the internal land mobile studies have been analyzed in conjunction with the spectrum needs of the broadcasting service. Therefore, we will remove the proposed secondary fixed and mobile allocations from these bands and will reserve this issue for further consideration. This action should not be interpreted as either supporting or foreclosing the future designation of these bands for land mobile on a primary or secondary basis.

40. In the 806-890 MHz bands, which were proposed for primary land mobile use with footnote NG138 allowing for secondary mobile-satellite use in the land mobile reserve bands, comments were filed by API, APPA, AT&T,

COMSAT, IAFC, LMCC, MCI, MOBILSAT, MOTOROLA, NASA, SIRSA, SKYLINK and UTC. Reply comments were filed by API, AT&T, LMCC, MOBILSAT, NASA, NABER and SKYLINK. APPA, COMSAT, MOBILSAT, NASA and SKYLINK all requested either that international footnote 700 (see Appendix C) be adopted or that domestic footnote NG138 (see NPRM Appendix C) be modified to provide a primary allocation for the mobile-satellite service (MSS) in this band. MOTOROLA, SIRSA, API and IAFC all supported NG138 as proposed, which allocates MSS on a secondary basis in the reserve bands between 806-890 MHz. AT&T, LMCC, NABER and UTC all requested that the allocation for MSS be deleted from this band. MCI, while taking no position on this issue in this proceeding, suggested that the proposed allocation to MSS would be more appropriately handled in the rulemaking proceeding requested by NASA, RM-4247,\* as there are significant questions that should be resolved before considering the adoption of the allocation.

41. Those requesting a primary allocation of MSS argued that MSS will not be feasible or reliable if it is preemptible as a secondary service. They argued that the proposed secondary MSS allocation is an unexplained and unjustifiable departure from the United States' advocacy of a primary MSS allocation at the 1979 WARC. They also claimed that the need for additional spectrum for terrestrial cellular services has not been demonstrated. They further argued that MSS will be an economically viable service, which they claim is supported by interested parties filing in RM-4247.

42. Those that supported proposed footnote NG138 did so emphasizing that the bands are important for terrestrial land mobile operations and that satellite operations should not be afforded any protection from terrestrial operations but should be required to protect terrestrial operations. Those opposed to the allocation argued that the reserve spectrum is needed to meet the growing land mobile demand and that this spectrum should be retained to accommodate known land mobile requirements instead of allocating it to an experimental system. They argued that it would be far more efficient to use the spectrum for terrestrial systems that

will be able to serve many millions of subscribers with a better grade of service than an MSS system like the one proposed by NASA could. They argued that the NASA system could optimistically only serve about a quarter of a million subscribers. They further argued that a secondary allocation to MSS could in practice result in a permanent MSS allocation due to the large investment involved and the long life of a satellite (8-10 years). AT&T went on to argue that authorizing MSS in this band is likely to reduce aggregate demand, which is needed to support land mobile service outside the large urban areas. Further, it argued that before any allocation, primary or secondary, is made for MSS, all the issues involving sharing, including sharing criteria, should be fully examined.

43. In its reply comments AT&T added that the MSS market and technology are unproven and that such a system may never be commercially feasible. Further, AT&T agreed with MCI that it would be premature to reallocate any of the 800 MHz reserve bands to MSS until the issues of RM-4247, *supra*, are resolved. In their reply comments MOBILSAT, NASA and SKYLINK claimed that those with land mobile interest, which requested the reserve bands be used to satisfy future terrestrial land mobile needs, failed to document their needs and overlooked the basic predicate of cellular technology that spectrum will be conserved through reuse by "cell-splitting" as demand within a particular cell or market area grows. They also rejected the AT&T argument that, because terrestrial systems are more efficient, the reserve bands should be allocated for terrestrial systems; they claimed that the terrestrial systems will never meet the needs of the non-urban dwellers. NASA claimed that up to 40% of the population lies beyond the metropolitan areas where terrestrial cellular services are most likely. Further, NASA claimed that MSS will complement rather than compete with terrestrial services to provide a nationwide integrated mobile radio system and that MSS will stimulate demand for terrestrial systems, not reduce it. NASA also rejected the argument that a primary MSS allocation in this band will risk a complete foreclosure of the use of this band by terrestrial land mobile services. It noted that terrestrial mobile services have been allocated all but 14 MHz of this band, that the NASA petition only requests 8 MHz for MSS, and that the remaining 6 MHz of reserve spectrum can be kept in reserve to await

\* RM-4247, "Amendment of Parts 2, 22 and 25 of the Commission's Rules Relative to Satellite Augmentation of Terrestrial Cellular and Non-Cellular Mobile Communications Systems Through Establishment of a Mobile Satellite Service", was filed on November 24, 1982 by National Aeronautics and Space Administration.



development of the terrestrial mobile and MSS services. NASA also requested that 890-896 MHz be kept in reserve until the results of the experimental use of 821-825 MHz and 866-870 MHz have been evaluated. MOBILSAT, NASA and SKYLINK also agreed with MCI that this allocation issue could best be resolved in NASA's pending petition for rulemaking, RM-4247, which NASA noted has produced over 50 well focused comments on both sides of the issue.

44. We agree that this issue could best be resolved in NASA's petition for rulemaking RM-4247 where the arguments on both sides may be more fully developed. Therefore, we will remove proposed footnote NG138 from the Table and in the future make any appropriate modifications to the Table according to Commission action taken regarding RM-4247 or in any other appropriate proceeding. This action should not be interpreted as either supporting or foreclosing designation of these bands for mobile-satellite use.

45. The 902-928 MHz band is used for Government radiolocation, operation of industrial, scientific and medical (ISM) equipment, and automatic vehicle monitoring systems. The NPRM proposed to continue these uses and to provide a secondary allocation for amateur use. Comments were filed by LMCC and MOTOROLA. Both requested the Commission to add a mobile allocation on a secondary basis in this band. LMCC also requested that a primary fixed allocation be included in this band. They argued that this was the U.S. proposal to the 1979 WARC and that there is no rational basis to abandon the flexibility obtained there prior to any specific radio service allocation proceeding. The fixed and mobile allocations obtained at the 1979 WARC in this band were intended to provide flexibility for possible future domestic allocations. We do not believe the record here justifies a change in the domestic allocation table. Thus, we will maintain the allocations in this band as proposed in the NPRM. However, should an adequate showing be made in the future, we will, of course, consider appropriate action.

46. For the 947-960 MHz fixed band, comments were filed by MOTOROLA and NAB. NAB requested that NG9 be deleted. NG9 reads as follows:

NG9 Aural broadcast intercity relay stations may be authorized to use the band 947-952 MHz on the condition that harmful interference will not be caused to other classes of stations operating in accordance with the Table of Frequency Allocations.

47. It argued this is an unnecessary note. We agree. We will delete NG9

from the Table as it is no longer consistent with the new format of the allocation Table. This footnote is not an allocation but an assignment plan and is already contained in Part 74.

48. MOTOROLA requested a primary mobile allocation be added to the 952-960 MHz band. It argued that this flexibility was obtained at the 1979 WARC and should be maintained domestically. We do not agree. We feel the band is too heavily used by the fixed service to be of any value for the mobile service at this time and for the foreseeable future. Therefore, we will maintain the rest of the allocations in this band as proposed in the NPRM.

49. For the 1435-1535 MHz mobile band, which has been used for aeronautical telemetering, AFTRCC requested that footnote US78 (see Appendix C) be modified as proposed in its Petition for Rulemaking, RM-4077. US78 specifies certain frequencies for manned and for unmanned aircraft. AFTRCC would have us modify US78 by adding the 2310-2390 MHz band and removing some of the restrictions now governing the use of the frequencies between manned and unmanned use. However, modification of US78 as requested is outside the scope of this proceeding and should appropriately be handled in RM-4077. Thus, we are retaining footnote US78 without change.

50. The 2200-2290 MHz and 7450-7550 MHz bands were proposed for Government use, including space research in the 2200-2290 MHz band and meteorological-satellite in the 7450-7550 MHz band. COMSAT requested that a primary non-Government space research allocation be made in these bands. It argued that these bands would be needed because of the President's decision that the civil operational remote sensing capability is to be transferred to the private sector. Further, it argued that by making a primary allocation for space research in this proceeding we would eliminate the necessity for a future rule making proceeding and would still allow the Commission to judge specific applications before allowing any operations in these bands.

51. These bands are heavily used by government operations and there are no current requirements for non-Government use. Therefore, we will maintain these bands as proposed in the NPRM. However, if the operations of the remote sensing satellites are in the future turned over to the private sector, then we will review the non-Government requirements for these bands and make any appropriate arrangements to satisfy those needs at that time.

52. The 2310-2390 MHz band has been used by amateurs on a secondary basis. However, because of the proposed aeronautical telemetry allocation for this band, we proposed to delete the amateur allocation. ARRL and WALMSLEY asked that this allocation be retained. ARRL requested that the Commission investigate the possibility of geographical sharing between amateurs and aeronautical telemetering. WALMSLEY claimed this is the best band for amateurs to learn through experimentation and that the straight line propagation properties of these frequencies plus use of directive antennas make the protection of some small users of this band unnecessary. Therefore, he requested the proposal to exclude the amateurs from this band not be adopted.

53. As noted in the NPRM, there is little evidence to support the ARRL proposal of sharing this band between aeronautical telemetering and the amateur service and no new information was filed in response to the NPRM to support such sharing. Therefore, we are maintaining the allocations in this band as proposed in the NPRM. However, it should be noted, as was also stated in the NPRM, that the bands immediately adjacent to this band are available for amateur use.

54. AFTRCC asked that proposed footnote US276 for this band (see Appendix C) be modified to clarify the term "aeronautical telemetry". It requested that this term be defined like the term "aeronautical telemetering mobile stations" in § 2.1 of the Commission's Rules. We agree that US 276 should be clarified, and we are adopting the following language:

US276 Use of the band 2310-2390 MHz by the mobile service is limited to aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof. Exceptionally, all other mobile telemetering users shall be secondary.

55. The 2500-2690 MHz bands are allocated for both terrestrial and satellite services internationally. However, with NG102, we have restricted the fixed satellite use for common carriers to Alaska and the Pacific area and for educational use in the contiguous states. COMSAT has requested that this footnote be deleted and that a primary fixed-satellite service (FSS) allocation be made in this band. It argued this would provide flexibility to use the band for international fixed-satellite use, such as for feeder links for maritime satellite operations.

56. As noted in the NPRM, the international allocations provide the



necessary flexibility to add a primary fixed-satellite service allocation to the domestic Table if it is determined in a future rulemaking proceeding that such an allocation is needed and compatible. However, at the present time, it appears that any type of satellite service will have difficulty sharing due to the extensive terrestrial use of this band. Therefore, we will maintain the allocations for this band as proposed in the NPRM.

57. The 3400-3600 MHz, 3600-3700 MHz, 4500-4800 MHz, and 5850-5925 MHz bands are now allocated internationally for both terrestrial and fixed satellite services. Domestically, however, these bands have been used for government radiolocation, particularly for military purposes. Our proposal would retain the government radiolocation use of these bands and permit limited intercontinental fixed-satellite use in all but the 3400-3600 MHz band if no interference is caused. COMSAT was concerned that primary unrestricted allocations for the FSS had not been made in the 3400-3600 MHz, 3600-3700 MHz, 4500-4800 MHz and 5850-5925 MHz bands. It noted that INTELSAT is currently studying all of these bands for FSS—in particular the 3625-3700 MHz and the 5850-5925 MHz bands. It argued that at some point steps must be taken to bring the domestic Table in line with the 1979 WARC allocations for these bands and suggested a three step plan to accomplish this.

58. As previously stated in the NPRM, the allocations in these bands for the federal government are vital for both domestic national defense systems and national defense systems that operate on a world wide basis. The limited access proposed for the FSS is consistent with future INTELSAT projected requirements. Therefore, we will maintain the allocations proposed in the NPRM. Any additional use of these bands by the fixed-satellite service will require a separate rulemaking proceeding.

59. IN the 5925-7075 MHz band, CORF commented that international footnotes 809 and 791 appear to have been inadvertently omitted from the non-Government column of the Table. International footnotes 809 and 791 were proposed for domestic adoption in the appropriate bands in the NPRM (see MPRM Appendix C, Column 5, bands 6425-6525 MHz, 6525-6875 MHz, 6875-7075 MHz, 7075-7125 MHz and 7125-8450 MHz). We are adopting these footnotes as proposed (see Appendix C), and, thus, providing adequate notification.

60. The 6425-6525 MHz band used for common carrier services has also been used for television pickup on a secondary basis, as specified in footnote NG122 (see Appendix C). AT&T requested the footnote NG122 be modified to clarify that secondary operation is available only to television pickup stations operating under Part 74. We agree. For clarification we will add the phrase "under Part 74" to footnote NG122. The modified footnote will read as follows:

NG122 Television Pickup stations may be authorized under Part 74 in the 6425-6525 MHz band on secondary basis to stations operating in accordance with the Table of Frequency Allocations.

61. The 10.6-10.68 GHz band was proposed for shared Government/non-Government primary earth exploration-satellite use and space research use and non-Government primary fixed use. Footnote US277 also proposed a primary radio astronomy allocation and listed radio astronomy sites to be protected. Comments were filed by M/A-COM and CORF. M/A-COM was concerned about US277 (see NPRM Appendix C) because the actual coordinates of the radio astronomy sites were not listed. It requested this information be added to the note. CORF supported the radio astronomy allocation made by footnote US277. For clarification we will modify US277 by adding the coordinates to the radio astronomy sites. The modified footnote is stated in Appendix C.

62. The 10.7-11.7 GHz band has been used primarily for common carrier fixed and fixed-satellite services and the 12.75-13.25 GHz band has been used for a variety of microwave services. We proposed to continue these allocations and to include a fixed-satellite allocation for the 12.75-13.25 GHz band. Both fixed-satellite allocations would be available only for international systems pursuant to footnote NG104. HUGHES requested that consideration be given to allocating an additional 500 MHz of bandwidth to the domestic fixed-satellite service (FSS). It claimed the domestic requirements for FSS are growing rapidly, and existing allocations will not be able to meet the demand. It noted that coordination with the fixed service will be necessary but claimed that it will be no worse than the coordination problems now experienced at C-band.

63. The intent of our WARC proposals for these bands and of the allocations proposed in the NPRM was to provide additional FSS allocations for international use. Allocations for the domestic fixed-satellite service in these bands is outside the scope of this

proceeding. Therefore, we will maintain the allocations purposed in the NPRM.

64. In the 12.2-12.7 MHz band, which was proposed for primary fixed and broadcasting-satellite use, comments were filed by AAR, AMST, CBS, CPOA, CPRA, LA SHERIFF, NAB, USSB and UTC and reply comments by LA COUNTY, LA SHERIFF and STC. AAR, LA SHERIFF, UTC, CPOA, and CPRA in their comments and LA COUNTY and LA SHERIFF in their reply comments were all interested in maintaining a terrestrial fixed allocation. They noted the U.S. Senate's proviso attached to its advice and consent to ratification of the 1979 WARC Treaty, which stated that the introduction of broadcasting-satellite operations must be carried out in a manner that minimizes unreasonable disruptions to existing users. With this in mind, AAR requested that NG139 (see Appendix C) be modified by adding the following sentence at the end of the footnote:

The introduction of a Direct Broadcasting Satellite Service into the 12.2-12.7 GHz band shall be carried out in a manner which minimizes unreasonable disruptions to existing uses on that band.

It claimed this addition would accurately reflect the views of the U.S. Senate. In their reply comments both LA COUNTY and LA SHERIFF supported AAR's proposed modification. However, LA COUNTY requested the phrase "and without compromising existing systems' configuration and reliability" be added.

65. In its comments and reply comments LA SHERIFF requested that DBS operations be confined to those areas not already served by more conventional forms of television. It claimed that this was the original intent of DBS and that current users of this band in large urban areas will have a difficult, and in some cases an impossible, task of developing an acceptable alternative if they are displaced by DBS. UTC requested the Commission to maintain flexibility with the fixed service in this band until after the 1983 RARC, noting that the BSS allocation may be reduced at the conference, which would allow continued use of the band by terrestrial services. CPOA and CPRA arguments were much the same as LA SHERIFF; however, CPOA requested co-sharing of the band between the fixed service and the broadcasting-satellite service while CPRA requested that BSS be given only secondary status in this band.

66. In its reply comments STC claimed that the comments regarding fixed use of this band are misplaced as the instant proceeding merely conforms the Table



to actions taken by the Commission in General Docket 80-603. Nevertheless, STC responded to the claims made in support of the fixed service continued use of this band, noting that, should the United States not be allotted the entire band for DBS at the 1983 RARC, the fixed service could be allowed to continue using the unallocated portion of the band. It also responded that none of the commenters who claimed that suitable replacement spectrum for the fixed service was not available provided any support for this claim and that the contention that DBS should be confined to rural areas was very narrow in outlook and would deny the benefits provided by DBS to the urban areas.

67. AMST, CBS, NAB and USSB in their comments and STC in its reply comments addressed the issue of terrestrial broadcasting in this band. AMST, CBS and NAB claimed that deleting the terrestrial broadcasting allocation from this band is both unnecessary and undesirable and requested that such an allocation be put back into the Table. USSB and STC opposed terrestrial broadcasting in this band and supported deleting the allocation.

68. Those in favor of the terrestrial broadcasting allocation argued that the Commission should maintain the flexibility in this band obtained at the 1979 WARC, especially until after the 1983 RARC, as there may be possibilities for sharing. Further, they argued that this band would provide an opportunity to implement high-resolution television broadcasting.

69. USSB argued that the feasibility test conducted by CBS, submitted as late comments to the Third NOI in this proceeding, demonstrated, if anything, that terrestrial video broadcasting in the 12 GHz band is impractical due to the limited service area at this frequency and the large amount of spectrum needed for each channel. STC in its reply comments supported USSB arguments.

70. USSB on a separate issue requested that the Commission allow non-conforming satellite uses of this band on a secondary basis by adding a footnote. In particular it was interested in operating low power service channels to receive program material from its member stations.

71. We agree with STC that the comments regarding the fixed use of this band are misplaced. The issue was fully addressed and considered by the Commission in General Docket 80-603. Further, we do not believe the proposed modification of NG139 as proposed by AAR will be of any great value, as the Commission is fully cognizant of the

reaccommodation problems facing the existing fixed users of this band and we will make every effort to minimize disruptions to their service.<sup>9</sup> With regard to the results of the 1983 RARC, the U.S. obtained the required spectrum and orbital allocations to implement the DBS service. Therefore, there will be no need for further Commission action to implement the results of the 1983 RARC with regard to the allocation issues of this band. With regard to the request for a terrestrial broadcasting allocation for this band, the comments presented no new evidence that the problem of sharing this band between terrestrial and space services can be overcome. Finally, the USSB request for a footnote to allow nonconforming satellite use of this band is outside the scope of this proceeding. Therefore, we do not believe any changes to this band are appropriate at this time and are adopting the allocations in this band as presented in the NPRM.

72. For the 18.6-18.8 GHz band, we proposed to add allocations for shared Government/non-Government primary earth exploration-satellite and space research use to the allocations for non-Government primary fixed, fixed-satellite and mobile (except aeronautical mobile) use. We also proposed power limits for the fixed and mobile services in the band (US254) and a power flux density limit for the fixed-satellite service (US255) (see Appendix C). Comments were filed by COMSAT and M/A-COM. COMSAT felt the power limits on the fixed-satellite service would be more stringent than necessary and exceed the limits contained in the Final Acts of the 1979 WARC and would, therefore, be ineffective because other countries will not be bound by these limits. M/A-COM suggested more flexibility is needed in footnote US254 since both passive sensor technology and microwave transmission technology will evolve over the years and suggested the addition of the following sentence to US254:

Prior to January 1, 1990, a re-evaluation of microwave sensor technology will be undertaken by the U.S. Government to determine whether these power limits continue to be appropriate.

73. As noted in the NPRM, the power limits of these footnotes were U.S. proposals to the 1979 WARC and are required to keep interference to the satellite sensors below a harmful level. With regard to the M/A-COM proposed

modification to US254, this is not required or appropriate as the Commission may re-evaluate these power limits at any time and the public may petition for such a re-evaluation at any time. Therefore, we will maintain the allocation for this band proposed in the NPRM.

74. In the 22.5-23.0 GHz band, we proposed non-Government primary broadcasting-satellite use and shared Government/non-Government fixed and mobile use. We also proposed a shared Government/non-Government inter-satellite allocation in the 22.55-23.00 MHz segment. GE and M/A-COM objected to a primary broadcasting-satellite (BSS) allocation and a secondary fixed allocation and requested a co-equal primary fixed and mobile allocation along with the BSS allocation. They argued the band is poorly suited for BSS because 22.235 GHz is the center of the water absorption band and BSS operation will not be able to handle the rain fades that will occur. Therefore, GE argued that there is no reason to believe that BSS will ever develop in this band. GE and M/A-COM also argued that the band is needed by fixed operations and that the proposed allocation would destroy the pairing for the common carrier portion of the band. Further, they claimed that a co-equal primary allocation would retain the flexibility necessary for the Commission to make an appropriate choice in the future after the technology develops. M/A-COM further argued that BSS technology is such that it does not expect that a second band will be needed for BSS until some time between 1995 and 2003. GE argued that the proposed NPRM leaves a threat over the fixed service users that they would become secondary to BSS operations.

75. In its reply comments STC rejected GE and M/A-COM arguments, noting that the BSS allocation is only 500 MHz while the fixed service still has a primary allocation of 1900 MHz in the 22 GHz band and has primary allocations in nearby bands at 17.7-19.7 GHz and 27.5-29.5 GHz. Further, it noted that this is the only other band allocated to BSS below 40 GHz besides the 12 GHz allocation and that the problems in sharing this band between the fixed service and BSS will be no less than those now encountered between the two services at 12 GHz.<sup>10</sup>

<sup>9</sup> On September 9, 1983, the Commission adopted a Report and Order in Docket 82-334, which provides reaccommodation spectrum for fixed users.

<sup>10</sup> The STC assessment that 22.5-23.0 GHz is the only other band allocated for BSS below 40 GHz is not quite correct as there is a BSS allocation at 2.5-2.655 GHz, even though the band is heavily used by other services.



76. The Commission action in the First Report and Order in this proceeding has provided for BSS use of the FSS band, 11.7-12.2 GHz. Due to this action, it now appears questionable as to whether BSS use of the 22.5-23.0 GHz will be required in the foreseeable future. Therefore, we are providing the fixed and mobile services a primary allocation.

77. For the 47.2-49.2 GHz part of the 47.2-50.2 GHz band and the 74.0-75.5 GHz band, we are adding footnote US297. It reads as follows:

US297 The bands 47.2-49.2 GHz and 74.0-75.5 GHz are also available for feeder links for the broadcasting-satellite service.

This footnote is editorial in nature as it does not add any allocations nor does it restrain any allocations. It is included for informational purposes only for future planners of the spectrum above 40 GHz.

#### Other Matters

78. AAR, AT&T and FIT all supported the new format of the Table, noting its simple and clear style. AAR and FIT, however, requested that a separate "assignment table" be placed in Part 2 of the Rules immediately after the allocations table to provide information lost by the new format. There would be little advantage in providing an assignment table in Part 2 as it would just contain information now available elsewhere in the operating rules. Therefore, we will not incorporate an assignment table into Part 2.

79. CORF stated its dissatisfaction with footnote US74, which provides radio astronomy operations protection from adjacent band radiation (see Appendix C), noting that new communications techniques, such as spread-spectrum, could render adjacent radio astronomy bands useless under US74. The protection level provided by US74 has been a long standing policy of the Commission. Modification of this policy would require a complete rulemaking proceeding that could adequately address all of the issues involved. Therefore, modification of US74 is inappropriate in this proceeding and we will maintain US74 as proposed. CORF also was concerned with footnote US246 (see Appendix C), which states "no stations will be authorized to transmit" in certain bands. It claimed this does not preclude the use of passive bands for certain low power or experimental systems that do not require authorization, and it therefore requested the phrase be replaced by "all transmissions are prohibited" as used in international footnote 721 (see Appendix C). The phrase "no stations will be authorized to transmit" was selected for

footnote US246 because its terms and restrictions are definable, enforceable and consistent with adopted Commission policy. Therefore, we feel that US246 as proposed in the NPRM will better serve all parties involved.

80. CORF requested that footnote US117 (see Appendix C) be modified by adding the National Radio Astronomy Observatory, Socorro, New Mexico to the list of observatories in the footnote, that footnote NG56 (see Appendix C) be modified by adding the phrase "radio astronomy observations in the 73-74.6 MHz band" to the items to which mobile-radio remote control transmissions must not cause interference, that footnote US257 (see Appendix C) be modified by deleting "and Five College Radio Astronomy Observatory Quabbin Reservoir (near Amherst, MA)" and that footnotes US7 (see Appendix C) and NG14 (see Appendix C) be modified by deleting the word "plate" since the power limits should also apply to transmitters using solid state devices.

81. We will make the editorial modifications requested by CORF to footnotes US7 and US257 (see Appendix C for text). However, its requested modification to US117 and NG56 is more than editorial and is beyond the scope of this proceeding. The requested protection for the National Radio Astronomy Observatory, Socorro, New Mexico, is being accomplished through agreements among the executive branch agencies concerned; therefore modification to US117 is not required. CORF's requested modification to footnote NG14 appears to be a typographic error as NG15 seems to be the appropriate footnote. We agree that NG15 needs to be clarified by replacing the word "plate" by "final amplifier" (see Appendix C for text), and we will make that change.

82. CORF also recommended that the Commission adopt the following policy regarding the development of fixed and mobile service in bands above 20 GHz that are shared with passive services:

\* \* \* where a choice can be made, fixed systems having low transmitter power requirements and employing narrow antenna beams should be utilized in bands shared with passive services. Conversely, other types of fixed systems should be allocated in bands not shared with passive services. Development of mobile systems, which typically have broad antenna beam coverage, should be avoided in the shared bands, as should any system which emits significant power at elevation angles greater than approximately 10 degrees.

This policy proposed by CORF is beyond the scope of this proceeding and should be considered in a separate

rulemaking proceeding that could adequately address all of the issues involved.

83. Footnotes US31, US77, NG47 and NG128 were modified and new footnotes US294 and NG141 were added by recent Commission actions.<sup>11</sup> We are incorporating these changes here.

#### Administrative

##### *Regulatory Flexibility Act Final Analysis*

##### *I. Need for and objective of final rules:*

84. The objective is to implement the Final Acts of the 1979 World Administrative Radio Conference into Part 2 of the Rules. This action is necessary as Section 303(r) of the Communications Act of 1934, as amended, mandates the Commission to make rules and regulations as necessary to carry out the provisions of international treaties. Further it will provide domestic systems, operating within the provisions of the treaty, rights to international protection from harmful interference as provided for by the Final Acts.

##### *II. Summary of issues raised by public comments:*

85. There were no comments filed addressing the matters discussed in the initial regulatory flexibility analysis.

##### *III. Alternatives to the rule:*

86. It does not appear that there are any significant alternatives to the adopted rules that would accomplish the stated objectives. No public comment was received regarding such alternatives.

87. Accordingly, it is ordered, That pursuant to the authority found in Section 4(i), 301 and 303(r) of the Communications Act of 1934, as amended (47 U.S.C. 154(i), 301, 303(r)), Part 2 of the Commission's Rules and

<sup>11</sup> Commission action in Docket 82-182, released December 17, 1982, (FCC 82-506, 47 FR 56852) modified US31, which assign channel in the aeronautical mobile service in the 121, 8375-123.0675 MHz band; an Order adopted December 8, 1982, released December 14, 1982 modified US77, which authorizes Government operations in the 156.25-157.0375 MHz band; a Report and order in Docket 80-112 and 80-116, released July 15, 1983, (FCC 83-243, 48 FR 33873) modified NG47, which assign channels to fixed operations in the 2500-2690 MHz band; a Report and Order in Docket 82-536 released May 19, 1983, (FCC 83-154, 48 FR 28445) modified NG128, which allows AM broadcast licensees to transmit signals intended for utility load management; a Report and Order in Docket 82-9 released January 27, 1983, (FCC 83-34, 48 FR 5922) added US294, which authorizes Power Line Carrier systems in the spectrum below 490kHz; a Report and Order in Docket 82-694 released July 22, 1983 (FCC 83-348, 48 FR 34039) added NG141, which authorizes meteor burst communications by fixed stations in Alaska.



Regulations is amended as specified in Appendix C. These amendments become effective 30 days after publication of the Second Report and Order in the *Federal Register*. Because a number of issues in this proceeding have not yet been resolved, we are leaving this docket open.

88. Points of contact on this matter are William Torak, (202) 632-7025 and Fred Thomas, (202) 653-8171.

Federal Communications Commission.

William J. Tricarico,

Secretary.

#### Appendix A

In response to the Notice of Proposed Rule Making in General Docket 80-739, the following submitted timely comments:

- (1) Aerospace & Flight Test Radio Coordinating Council—AFTRCC
- (2) American Low Power Television Association and National Institute for Low Power Television—ALPTA & NILPT
- (3) American Petroleum Institute (Central Committee on Telecommunications)—API
- (4) American Public Power Association—APPA
- (5) American Radio Relay League—ARRL
- (6) American Telephone and Telegraph Co.—AT&T
- (7) Association of American Railroads—AAR
- (8) Association of Maximum Service Telecasters—AMST
- (9) CBS, Inc.—CBS
- (10) Communications Satellite Corporation—COMSAT
- (11) Corporation for Public Broadcasting—CPB
- (12) Cosmos Broadcasting Corporation and Multimedia—COSMOS
- (13) Council for UHF Broadcasting—CUB
- (14) Cox Communications, Inc. and WPHL-TV, Inc.—COX
- (15) Forest Industries Telecommunications—FIT
- (16) General Electric Company—GE
- (17) Goldfarb, Marc E. (Amateur)—GOLDFARB
- (18) Hutchinson, Richard (Amateur)—HUTCHINSON
- (19) International Association of Fire Chiefs, Inc.—IAFC
- (20) Independent Television Stations, Association of—INTV
- (21) Los Angeles County Sheriff's Department—LA SHERIFF
- (22) Land Mobile Communication Council—LMCC
- (23) M/A-COM, Inc.—M/A-COM
- (24) MCI Telecommunications Corporation—MCI

- (25) Mobile Satellite Corporation—MOBILSAT
- (26) Motorola, Inc.—MOTOROLA
- (27) National Academy of Sciences (Committee on Radio Frequencies)—CORF
- (28) National Aeronautics and Space Administration—NASA
- (29) National Association of Broadcasters—NAB
- (30) National Association of Public Television Stations—NAPTS
- (31) National Broadcasting Company, Inc.—NBC
- (32) National UHF Broadcasters Association—NUBA
- (33) Offshore Navigation, Inc.—ONI
- (34) Special Industrial Radio Service Association, Inc.—SIRSA
- (35) Skylink Corporation—SKYLINK
- (36) Southern Pacific Satellite Company—SPSC
- (37) Satellite Television Corporation—STC
- (38) Springfield Television Corporation—SPRINGFIELD
- (39) United Satellite Communications, Inc.—USCI
- (40) Utilities Communications System, Inc.—UTC
- (41) Waterway Communications Systems, Inc.—WATERCOM
- (42) Western Union Telegraph Company—WESTERN UNION

The following submitted late comments:

- (1) California Peace Officer's Association—CPOA
- (2) California Public-Safety Radio Association, Inc.—CPRA
- (3) Hughes Aircraft Company—HUGHES
- (4) United States Satellite Broadcasting Company, Inc.—USSB
- (5) Walmsley, Heru Ra (Amateur)—WALMSLEY

The following submitted timely reply comments:

- (1) American Petroleum Institute (Central Committee on Telecommunications)—API
- (2) American Telephone and Telegraph Company—AT&T
- (3) Association of Maximum Service Telecaster—AMST
- (4) Communications Satellite Corporation—COMSAT
- (5) Cosmos Broadcasting Corporation, Cox Communications, Inc., and Multimedia, Inc.—COSMOS
- (6) Direct Broadcast Satellite Corporation—DBSC
- (7) Forest Industries Telecommunications—FIT
- (8) GTE Satellite Corporation—GSAT
- (9) Los Angeles, County of—LA COUNTY
- (10) Los Angeles County Sheriff's

Department—LA SHERIFF

- (11) Land Mobile Communication Council—LMCC
- (12) Mobile Satellite Corporation—MOBILSAT
- (13) Motorola, Inc.—MOTOROLA
- (14) National Aeronautics and Space Administration—NASA
- (15) National Association of Business and Educational Radio, Inc.—NABER
- (16) National Ocean Industries Association—NOIA
- (17) Offshore Navigation, Inc.—ONI
- (18) RCA American Communications, Inc.—RCA
- (19) Racal-Decca Survey, Inc.—RACAL-DECCA
- (20) Satellite Television Corporation—STC
- (21) Skylink Corporation—SKYLINK
- (22) Southern Pacific Satellite Company—SPSC
- (23) United Satellite Communications, Inc.—USCI
- (24) United States Satellite Broadcasting Company, Inc.—USSB

#### Appendix B: Final Protocol Statements

No. 32

*For the Federal Republic of Germany, Belgium, Denmark, the United States of America, Greece, Iceland, Italy, Luxembourg, Norway, the Kingdom of the Netherlands, Portugal, the United Kingdom of Great Britain and Northern Ireland, Turkey:*

The above-mentioned administrations reserve their right to operate systems in the mobile-satellite service in the frequency range 235-399.9 MHz under the provisions of the relevant footnote to the Table of Frequency Allocations, subject only to coordination as prescribed in Article N13A. The additional provision of this footnote imposes a condition of non-interference which could lead to a request to cease operation of a previously coordinated satellite system in the case where an administration, despite having agreed to such a satellite system, puts into service or merely plans a system that might receive harmful interference. Such a condition is unacceptable to the above administrations.

No. 38

*For the United States of America:*

The delegation of the United States of America formally declares that the United States of America does not, by signature of these Final Acts on its behalf, accept certain decisions taken by this Conference in regard to the Table of Frequency Allocations and the



associated footnotes, and therefore the United States of America:

1. In view of the fact that this Conference has failed to provide adequate allocations for the HF broadcasting service, particularly at 6 and 7 MHz, reserves on this matter as indicated in a separate statement made jointly with the delegations of Saudi Arabia, Cyprus, Spain, Greece, the United Kingdom, Sri Lanka and Zambia;

2. Reserves the right to operate stations in the mobile-satellite service in the frequency range 235 to 399.9 MHz as indicated in a separate statement made jointly with the delegations of the Federal Republic of Germany, Belgium, Denmark, Greece, Iceland, Italy, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom and Turkey;

3. In the operation of stations in the radiolocation service on a primary basis in the bands 430-440 MHz, 5 650-5 850 MHz, 8 500-8 750 MHz, 8 850-9 000 MHz, 9 200-9 300 MHz, 9 500-9 800 MHz, 10 000-10 500 MHz, 13.4-14 GHz, 15.7-17.3 GHz and 33.4-36 GHz, cannot guarantee protection to or coordination with other services;

4. Reserves the right to operate stations of fixed, mobile and radiolocation services on a primary basis in bands as specified in the footnotes pertinent to frequency bands 470-806 MHz, 890-960 MHz, without the condition specified in these footnotes that make such operations subject to agreement under Article N13A. The United States will coordinate its usage of such services with neighboring administrations which are affected;

5. In view of the fact that the Conference failed to provide adequate allocations for the HF maritime mobile service, particularly below 12 MHz, states its intention to satisfy maritime mobile requirements in the several HF bands below 10 MHz allocated to the mobile service on a primary basis.

#### Appendix C

Subpart A of Part 2 of title 47 CFR is revised as follows:

#### Subpart A—Terminology

##### § 2.1 Terms and definitions.

(a) Where a term or definition appears in this Part of the Commission's Rules, it shall be the definitive term or definition and shall prevail throughout the Commission's Rules.

(b) The source of each definition is indicated as follows:

CONV—*International Telecommunication Convention*, Malaga-Torremolinos, 1973.

RR—*Radio Regulations*, Geneva, 1982.

FCC—Federal Communications Commission.

(c) The following terms and definitions are issued:

*Accepted Interference.*<sup>1</sup> Interference at a higher level than defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations. (RR)

*Active Satellite.* A satellite carrying a station intended to transmit or retransmit radiocommunication signals. (RR)

*Active Sensor.* A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by transmission and reception of radio waves. (RR)

*Administration.* Any governmental department or service responsible for discharging the obligations undertaken in the Convention of the International Telecommunication Union and the Regulations. (CONV)

*Aeronautical Earth Station.* An Earth station in the fixed-satellite service, or, in some cases, in the aeronautical mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service. (RR)

*Aeronautical Fixed Service.* A radiocommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air transport. (RR)

*Aeronautical Fixed Station.* A station in the aeronautical fixed service. (RR)

*Aeronautical Mobile-Satellite Service.* A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

*Aeronautical Mobile Service.* A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies. (RR)

*Aeronautical Radionavigation-Satellite Service.* A radionavigation-satellite service in which earth stations are located on board aircraft. (RR)

*Aeronautical Radionavigation Service.* A radio-navigation service

<sup>1</sup> The terms "permissible interference" and "accepted interference" are used in the coordination of frequency assignments between administrations.

intended for the benefit and for the safe operation of aircraft. (RR)

*Aeronautical Station.* A land station in the aeronautical mobile service.

*Note.*—In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea. (RR)

*Aircraft Earth Station.* A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft. (RR)

*Aircraft Station.* A mobile station in the aeronautical mobile service, other than a survival craft station, located on board an aircraft. (RR)

*Allocation (of a frequency band).* Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency band concerned. (RR)

*Allotment (of a radio frequency or radio frequency channel).* Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical area and under specified conditions. (RR)

*Altitude of the Apogee or Perigee.* The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth. (RR)

*Amateur-Satellite Service.* A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service. (RR)

*Amateur Service.* A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest. (RR)

*Amateur Station.* A station in the amateur service. (RR)

*Assigned Frequency.* The centre of the frequency band assigned to a station. (RR)

*Assigned Frequency Band.* The frequency band within which the emission of a station is authorized; the width of the band equals the necessary bandwidth plus twice the absolute value of the frequency tolerance. Where space stations are concerned, the assigned frequency band includes twice the maximum Doppler shift that may occur



in relation to any point of the Earth's surface. (RR)

**Assignment (of a radio frequency or radio frequency channel).** Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. (RR)

**Base Station.** A land station in the land mobile service. (RR)

**Broadcasting-Satellite Service.** A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.

**Note.**—In the broadcasting-satellite service, the term "direct reception" shall encompass both individual reception and community reception. (RR)

**Broadcasting Service.** A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission. (CONV)

**Broadcasting Station.** A station in the broadcasting service. (RR)

**Carrier Power (of a radio transmitter).** The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under the condition of no modulation. (RR)

**Characteristic Frequency.** A frequency which can be easily identified and measured in a given emission.

**Note.**—A carrier frequency may, for example, be designated as the characteristic frequency. (RR)

**Class of Emission.** The set of characteristics of an emission, designated by standard symbols, e.g., type of modulation, modulating signal, type of information to be transmitted, and also if appropriate, any additional signal characteristics. (RR)

**Coast Earth Station.** An earth station in the fixed-satellite service or, in some cases, in the maritime mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the maritime mobile-satellite service. (RR)

**Coast Station.** A land station in the maritime mobile service. (RR)

**Community Reception (in the broadcasting-satellite service).** The reception of emissions from a space station in the broadcasting-satellite service by receiving equipment, which in some cases may be complex and have antennae larger than those for individual reception, and intended for use: (1) by a group of the general public at one location; or (2) through a distribution system covering a limited area. (RR)

**Coordinated Universal Time (UTC).** Time scale, based on the second (SI), as defined and recommended by the CCIR,<sup>2</sup> and maintained by the Bureau International de l'Heure (BIH).

**Note.**—For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0 degrees longitude), formerly expressed in GMT. (RR)

**Coordination Area.** The area associated with an earth station outside of which a terrestrial station sharing the same frequency band neither causes nor is subject to interfering emissions greater than a permissible level. (RR)

**Coordination Contour.** The line enclosing the coordination area. (RR)

**Coordination Distance.** Distance on a given azimuth from an earth station beyond which a terrestrial station is subject to interfering emissions greater than a permissible level. (RR)

**Deep Space.** Space at a distance from the Earth approximately equal to, or greater than, the distance between the Earth and the Moon. (RR)

**Duplex Operation.** Operating method in which transmission is possible simultaneously in both directions of a telecommunication channel.<sup>3</sup> (RR)

**Earth Exploration-Satellite Service.** A radiocommunication service between earth stations and one or more space stations, which may include links between space stations in which:

- (1) Information relating to the characteristics of the Earth and its natural phenomena is obtained from active sensors or passive sensors on earth satellites;
- (2) Similar information is collected from air-borne or earth-based platforms;
- (3) Such information may be distributed to earth stations within the system concerned;
- (4) Platform interrogation may be included.

**Note.**—This service may also include feeder links necessary for its operation. (RR)

**Earth Station.** A station located either on the earth's surface or within the major portion of earth's atmosphere and intended for communication:

- (1) With one or more space stations; or
- (2) With one or more stations of the same kind by means of one or more reflecting satellites or other objects in space. (RR)

**Effective Radiated Power (e.r.p.) (in a given direction).** The product of the

<sup>2</sup>The full definition is contained in CCIR Recommendation 460-2.

<sup>3</sup>In general, duplex operation and semi-duplex operation require two frequencies in radiocommunication; simplex operation may use either one or two.

power supplied to the antenna and its gain relative to a half-wave dipole in a given direction. (RR)

**Emergency Position-Indicating Radiobeacon Station.** A station in the mobile service the emissions of which are intended to facilitate search and rescue operations. (RR)

**Emission.** Radiation produced, or the production of radiation, by a radio transmitting station.

**Note.**—For example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a radiation. (RR)

**Equivalent Isotropically Radiated Power (e.i.r.p.).** The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna. (RR)

**Equivalent Monopole Radiated Power (e.m.r.p.) (in a given direction).** The product of the power supplied to the antenna and its gain relative to a short vertical antenna in a given direction. (RR)

**Equivalent Satellite Link Noise Temperature.** The noise temperature referred to the output of the receiving antenna of the earth station corresponding to the radio-frequency noise power which produces the total observed noise at the output of the satellite link excluding the noise due to interference coming from satellite links using other satellites and from terrestrial systems. (RR)

**Experimental Station.** A station utilizing radio waves in experiments with a view to the development of science or technique.

**Note.**—This definition does not include amateur stations. (RR)

**Facsimile.** A form of telegraphy for the transmission of fixed images, with or without half-tones, with a view to their reproduction in a permanent form.

**Note.**—In this definition the term telegraphy has the same general meaning as defined in the Convention. (RR)

**Feeder Link.** A radio link from an earth station at a specified fixed point to a space station, or vice versa, conveying information for a space radiocommunication service other than for the fixed-satellite service. (RR)

**Fixed-Satellite Service.** A radiocommunication service between earth stations at a specified fixed point when one or more satellites are used; in some cases this service includes satellite-to-satellite links, which may also be effected in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services. (RR)



**Fixed Service.** A radiocommunication service between specified fixed points. (RR)

**Fixed Station.** A station in the fixed service. (RR)

**Frequency-Shift Telegraphy.** Telegraphy by frequency modulation in which the telegraph signal shifts the frequency of the carrier between predetermined values. (RR)

**Frequency Tolerance.** The maximum permissible departure by the centre frequency of the frequency band occupied by an emission from the assigned frequency or, by the characteristic frequency of an emission from the reference frequency.

**Note.**—The frequency tolerance is expressed in parts in  $10^6$  or in hertz. (RR)

**Full Carrier Single-Sideband Emission.** A single-sideband emission without suppression of the carrier. (RR)

**Gain of an Antenna.** The ratio, usually expressed in decibels, of the power required at the input of a loss free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum radiation. The gain may be considered for a specified polarization.

**Note.**—Depending on the choice of the reference antenna a distinction is made between:

- (1) Absolute or isotropic gain (Gi), when the reference antenna is an isotropic antenna isolated in space;
- (2) Gain relative to a half-wave dipole (Gd), when the reference antenna is a half-wave dipole isolated in space whose equatorial plane contains the given direction;
- (3) Gain relative to a short vertical antenna (Gv), when the reference antenna is a linear conductor, much shorter than one quarter of the wavelength, normal to the surface of a perfectly conducting plane which contains the given direction. (RR)

**Geostationary Satellite.** A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth. (RR)

**Geostationary Satellite Orbit.** The orbit in which a satellite must be placed to be a geostationary satellite. (RR)

**Geosynchronous Satellite.** An Earth satellite whose period of revolution is equal to the period of rotation of the Earth about its axis. (RR)

**Harmful Interference.** Interference which endangers the functioning of a

radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with these [international Radio] Regulations. (RR)

**Inclination of an Orbit (of an earth satellite).** The angle determined by the plane containing the orbit and the plane of the Earth's equator. (RR)

**Individual Reception (in the broadcasting-satellite service).** The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and in particular those possessing small antennae. (RR)

**Industrial, Scientific and Medical (ISM) (of radio frequency energy) Applications.** Operation of equipment or appliances designed to generate and use locally radio-frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications. (RR)

**Instrument Landing System (ILS).** A radionavigation system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing. (RR)

**Instrument Landing System Glide Path.** A system of vertical guidance embodied in the instrument landing system which indicates the vertical deviation of the aircraft from its optimum path of descent. (RR)

**Instrument Landing System Localizer.** A system of horizontal guidance embodied in the instrument landing system which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway. (RR)

**Interference.** The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

**Inter-Satellite Service.** A radiocommunication service providing links between artificial earth satellites. (RR)

**Ionospheric Scatter.** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the ionization of the ionosphere. (RR)

**Land Mobile-Satellite Service.** A mobile-satellite service in which mobile earth stations are located on land. (RR)

**Land Mobile Service.** A mobile service between base stations and land

mobile stations, or between land mobile stations. (RR)

**Land Mobile Station.** A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent.

**Land Station.** A station in the mobile service not intended to be used while in motion. (RR)

**Left-Hand (or Anti-Clockwise) Polarized Wave.** An elliptically or circularly-polarized wave, in fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a left hand or anti-clockwise direction. (RR)

**Line A.** Begins at Aberdeen, Washington running by great circle arc to the intersection of  $48^{\circ}$  N.,  $120^{\circ}$  W., thence along parallel  $48^{\circ}$  N., to the intersection of  $95^{\circ}$  W., thence by great circle arc through the southernmost point of Duluth, Minn., thence by great circle arc to  $45^{\circ}$  N.,  $85^{\circ}$  W., thence southward along meridian  $85^{\circ}$  W., to its intersection with parallel  $41^{\circ}$  N., thence along parallel  $41^{\circ}$  N., to its intersection with meridian  $82^{\circ}$  W., thence by great circle arc through the southernmost point of Bangor, Maine, thence by great circle arc through the southernmost point of Searsport, Maine, at which point it terminates. (FCC)

**Line B.** Begins at Tofino, B.C., running by great circle arc to the intersection of  $50^{\circ}$  N.,  $125^{\circ}$  W., thence along parallel  $50^{\circ}$  N., to the intersection of  $90^{\circ}$  W., thence by great circle arc to the intersection of  $45^{\circ}$  N.,  $79^{\circ}30'$  W., thence by great circle arc through the northernmost point of Drummondville, Quebec (Lat.  $45^{\circ}52'$  N., Long  $72^{\circ}30'$  W.), thence by great circle arc to  $48^{\circ}30'$  N.,  $70^{\circ}$  W., thence by great circle arc through the northernmost point of Campbellton, N.B., thence by great circle arc through the northernmost point of Liverpool, N.S., at which point it terminates. (FCC)

**Line C.** Begins at the intersection of  $70^{\circ}$  N.,  $144^{\circ}$  W., thence by great circle arc to the intersection of  $60^{\circ}$  N.,  $143^{\circ}$  W., thence by great circle arc so as to include all of the Alaskan Panhandle. (FCC)

**Line D.** Begins at the intersection of  $70^{\circ}$  N.,  $138^{\circ}$  W., thence by great circle arc to the intersection of  $61^{\circ}20'$  N.,  $139^{\circ}$  W. (Burwash Landing), thence by great circle arc to the intersection of  $60^{\circ}45'$  N.,  $135^{\circ}$  W., thence by great circle arc to the intersection of  $56^{\circ}$  N.,  $128^{\circ}$  W., thence south along  $128^{\circ}$  meridian to Lat.  $55^{\circ}$  N., thence by great circle arc to the intersection of  $54^{\circ}$  N.,  $130^{\circ}$  W., thence by great circle arc to Port Clements, thence

<sup>4</sup> See Resolution 68 of the Radio Regulations.



to the Pacific Ocean where it ends. (FCC)

**Maritime Mobile-Satellite Service.** A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

**Maritime Mobile Service.** A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service. (RR)

**Maritime Radionavigation-Satellite Service.** A radionavigation-satellite service in which earth stations are located on board ships. (RR)

**Maritime Radionavigation Service.** A radionavigation service intended for the benefit and for the safe operation of ships. (RR)

**Marker Beacon.** A transmitter in the aeronautical radionavigation service which radiates vertically a distinctive pattern for providing position information to aircraft. (RR)

**Mean Power (of a radio transmitter).** The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions. (RR)

**Meteorological Aids Service.** A radiocommunication service used for meteorological, including hydrological, observation and exploration. (RR)

**Meteorological-Satellite Service.** An earth exploration-satellite service for meteorological purposes. (RR)

**Mobile Earth Station.** An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points. (RR)

**Mobile-Satellite Service.** A radiocommunication service:

- (1) Between mobile earth stations and one or more space stations, or between space stations used by this service; or
- (2) Between mobile earth stations by means of one or more space stations.

**Note.**—This service may also include feeder links necessary for its operation. (RR)

**Mobile Service.** A radiocommunication service between mobile and land stations, or between mobile stations. (CONV)

**Mobile Station.** A station in the mobile service intended to be used while in motion or during halts at unspecified points. (RR)

**Multi-Satellite Link.** A radio link between a transmitting earth station and

a receiving earth station through two or more satellites, without any intermediate earth station.

**Note.**—A multisatellite link comprises one up-link, one or more satellite-to-satellite links and one down-link. (RR)

**Necessary Bandwidth.** For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions. (RR)

**Occupied Bandwidth.** The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage Beta/2 of the total mean power of a given emission.

**Note.**—Unless otherwise specified by the CCIR for the appropriate class of emission, the value of Beta/2 should be taken as 0.5%. (RR)

**On-Board Communication Station.** A low-powered mobile station in the maritime mobile service intended for use for internal communications on board a ship, or between a ship and its lifeboats and life-rafts during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions. (RR)

**Orbit.** The path, relative to a specified frame of reference, described by the centre of mass of a satellite or other object in space subjected primarily to natural forces, mainly the force of gravity. (RR)

**Out-of-band Emission.** Emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions. (RR)

**Passive Sensor.** A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by reception of radio waves of natural origin. (RR)

**Peak Envelope Power (of a radio transmitter).** The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions. (RR)

**Period (of a satellite).** The time elapsing between two consecutive passages of a satellite through a characteristic point on its orbit. (RR)

**Permissible Interference.** Observed or predicted interference which complies with quantitative interference and sharing criteria contained in these [international Radio] Regulations or in

CCIR Recommendations or in special agreements as provided for in these Regulations. (RR)

**Port Operations Service.** A maritime mobile service in or near a port, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons.

**Note.**—Messages which are of a public correspondence nature shall be excluded from this service. (RR)

**Port Station.** A coast station in the port operations service. (RR)

**Power.** Whenever the power of a radio transmitter etc. is referred to it shall be expressed in one of the following forms, according to the class of emission, using the arbitrary symbols indicated:

- (1) Peak envelope power (PX or pX);
- (2) Mean power (PY or pY);
- (3) Carrier power (PZ or pZ).

**Note 1.**—For different classes of emission, the relationships between peak envelope power, mean power and carrier power, under the conditions of normal operation and of no modulation, are contained in CCIR Recommendations which may be used as a guide.

**Note 2.**—For use in formulae, the symbol "p" denotes power expressed in watts and the symbol "P" denotes power expressed in decibels relative to a reference level. (RR)

**Primary Radar.** A radiodetermination system based on the comparison of reference signals with radio signals reflected from the position to be determined. (RR)

**Protection Ratio.** The minimum value of the wanted-to-unwanted signal ratio, usually expressed in decibels, at the receiver input determined under specified conditions such that a specified reception quality of the wanted signal is achieved at the receiver output. (RR)

**Public Correspondence.** Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission. (CONV)

**Radar.** A radiodetermination system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined. (RR)

**Radar Beacon (RACON).** A transmitter-receiver associated with a fixed navigational mark which, when triggered by a radar, automatically returns a distinctive signal which can appear on the display of the triggering radar, providing range, bearing and identification information. (RR)



**Radiation.** The outward flow of energy from any source in the form of radio waves. (RR)

**Radio.** A general term applied to the use of radio waves. (CONV)

**Radio Altimeter.** Radionavigation equipment, on board an aircraft or spacecraft or the spacecraft above the Earth's surface or another surface. (RR)

**Radio Astronomy.** Astronomy based on the reception of radio waves of cosmic origin. (RR)

**Radio Astronomy Service.** A service involving the use of radio astronomy. (RR)

**Radio Astronomy Station.** A station in the radio astronomy service. (RR)

**Radiobeacon Station.** A station in the radionavigation service the emissions of which are intended to enable a mobile station to determine its bearing or direction in relation to radiobeacon station. (RR)

**Radiocommunication.** Telecommunication by means of radio waves. (CONV)

**Radiocommunication Service.** A service as defined in this Section involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes.

**Note.**—In these [international Radio] Regulations, unless otherwise stated, any radiocommunication service relates to terrestrial radiocommunication. (RR)

**Radiodetermination.** The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves. (RR)

**Radiodetermination-Satellite Service.** A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations. (RR)

**Radiodetermination Service.** A radiocommunication service for the purpose of radiodetermination. (RR)

**Radiodetermination Station.** A station in the radiodetermination service. (RR)

**Radio Direction-Finding.** Radiodetermination using the reception of radio waves for the purpose of determining the direction of a station or object. (RR)

**Radio Direction-Finding Station.** A radiodetermination station using radio direction-finding. (RR)

**Radiolocation.** Radiodetermination used for purposes other than those of radionavigation. (RR)

**Radiolocation Land Station.** A station in the radiolocation service not intended to be used while in motion. (RR)

**Radiolocation Mobile Station.** A station in the radiolocation service

intended to be used while in motion or during halts at unspecified points. (RR)

**Radiolocation Service.** A radiodetermination service for the purpose of radiolocation. (RR)

**Radionavigation.** Radiodetermination used for the purposes of navigation, including obstruction warning.

**Radionavigation Land Station.** A station in the radionavigation service not intended to be used while in motion. (RR)

**Radionavigation Mobile Station.** A station in the radionavigation service intended to be used while in motion or during halts at unspecified points. (RR)

**Radionavigation-Satellite Service.** A radiodetermination-satellite service used for the purpose of radionavigation. This service may also include feeder links necessary for its operation. (RR)

**Radiotelemetry.** A radiodetermination service for the purpose of radionavigation. (RR)

**Radiotelemetry.** An automatic radio transmitter in the meteorological aids service usually carried on an aircraft, free balloon, kite or parachute, and which transmits meteorological data. (RR)

**Radiotelegram.** A telegram, originating in or intended for a mobile station or a mobile earth station transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service. (RR)

**Radiotelemetry.** Telemetry by means of radio waves. (RR)

**Radiotelephone Call.** A telephone call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or of the mobile-satellite service. (RR)

**Radiotelex Call.** A telex call, originating in or intended for a mobile station or a mobile earth station, transmitted on all or part of its route over the radiocommunication channels of the mobile service or the mobile-satellite service. (RR)

**Radio Waves or Hertzian Waves.** Electromagnetic waves of frequencies arbitrarily lower than 3,000 GHz, propagated in space without artificial guide. (RR)

**Reduced Carrier Single-Sideband Emission.** A single-sideband emission in which the degree of carrier suppression enables the carrier to be reconstituted and to be used for demodulation. (RR)

**Reference Frequency.** A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic

frequency has with respect to the centre of the frequency band occupied by the emission. (RR)

**Reflecting Satellite.** A satellite intended to reflect radiocommunication signals. (RR)

**Right-Hand (or Clockwise) Polarized Wave.** An Elliptically or circularly-polarized wave, in which the electric field vector, observed in any fixed plane, normal to the direction of propagation, whilst looking in the direction of propagation, rotates with time in a right-hand or clockwise direction. (RR)

**Safety Service.** Any radiocommunication service used permanently or temporarily for the safeguarding of human life and property. (CONV)

**Satellite.** A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body. (RR)

**Satellite Link.** A radio link between a transmitting earth station and a receiving earth station through one satellite. A satellite link comprises one up-link and one down-link. (RR)

**Satellite Network.** A satellite system or a part of a satellite system, consisting of only one satellite and the cooperating earth stations. (RR)

**Satellite System.** A space system using one or more artificial earth satellites. (RR)

**Secondary Radar.** A radiodetermination system based on the comparison of reference signals with radio signals retransmitted from the position to be determined. (RR)

**Semi-Duplex Operation.** A method which is simplex operation at one end of the circuit and duplex operation at the other.<sup>3</sup> (RR)

**Ship Earth Station.** A mobile earth station in the maritime mobile-satellite service located on board ship. (RR)

**Ship Movement Service.** A safety service in the maritime mobile service other than a port operations service, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the movement of ships. Messages which are of a public correspondence nature shall be excluded from this service. (RR)

**Ship's Emergency Transmitter.** A ship's transmitter to be used exclusively on a distress frequency for distress, urgency or safety purposes. (RR)

**Ship Station.** A mobile station in the maritime mobile service located on board a vessel which is not permanently



moored, other than a survival craft station. (RR)

**Simplex Operation.** Operating method in which transmission is made possible alternatively in each direction of a telecommunication channel, for example, by means of manual control. <sup>3</sup> (RR)

**Single-Sideband Emission.** An amplitude modulated emission with one sideband only. (RR)

**Spacecraft.** A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere. (RR)

**Space Operation Service.** A radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry, and space telecommand.

**Note.**—These functions will normal be provided within the service in which the space station is operating. (RR)

**Space Radiocommunication.** Any radiocommunication involving the use of one or more space stations or the use of one or more reflecting satellites or other objects in space. (RR)

**Space Research Service.** A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes. (RR)

**Space Station.** A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere. (RR)

**Space System.** Any group of cooperating Earth stations and/or space stations employing space radiocommunication for specific purposes. (RR)

**Space Telecommand.** The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate functions of equipment on a space object, including the space station. (RR)

**Space Telemetry.** The use of telemetry for transmission for a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft. (RR)

**Space Tracking.** Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object. (RR)

**Special Service.** A radiocommunication service, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to public correspondence. (RR)

**Spurious Emission.** Emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. (RR)

**Standard Frequency and Time Signal-Satellite Service.** A radiocommunication service using space stations on earth satellites for the same purposes as those of the standard frequency and time signal service.

**Note.**—This service may also include feeder links necessary for its operation. (RR)

**Standard Frequency and Time Signal Service.** A radiocommunication service for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception. (RR)

**Standard Frequency and Time Signal Station.** A station in the standard frequency and time signal service. (RR)

**Station.** One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.

**Note.**—Each station shall be classified by the service in which it operates permanently or temporarily. (RR)

**Suppressed Carrier Single-Sideband Emission.** A single-sideband emission in which the carrier is virtually suppressed and not intended to be used for demodulation. (RR)

**Survival Craft Station.** A mobile station in the maritime mobile service or the aeronautical mobile service intended solely for survival purposes and located on any lifeboat, life-raft or other survival equipment. (RR)

**Telecommand.** The use of telecommunication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance. (RR)

**Telecommunication.** Any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems. (CONV)

**Telegram.** Written matter intended to be transmitted by telegraphy for delivery to the addressee. This term also includes radiotelegrams unless otherwise specified.

**Note.**—In this definition the term telegraphy has the same general meaning as defined in the Convention. (CONV)

**Telegraphy.** <sup>4</sup> A form of telecommunication which is concerned in any process providing transmission and reproduction at a distance of documentary matter, such as written or printed matter or fixed images, or the reproduction at a distance of any kind of information in such a form. For the purposes of the [international] Radio Regulations, unless otherwise specified therein, telegraphy shall mean a form of telecommunication for the transmission of written matter by the use of a signal code. (RR)

**Telemetry.** The use of telecommunication for automatical indicating or recording measurements at a distance from the measuring instrument. (RR)

**Telephony.** <sup>4</sup> A form of telecommunication set up for the transmission of speech or, in some cases, other sounds. (RR)

**Television.** A form of telecommunication for the transmission of transient images of fixed or moving objects. (RR)

**Terrestrial Radiocommunication.** Any radiocommunication other than space radiocommunication or radio astronomy. (RR)

**Terrestrial Station.** A station effecting terrestrial radiocommunication.

**Note.**—In these [international Radio] Regulations, unless otherwise stated, any station is a terrestrial station. (RR)

**Tropospheric Scatter.** The propagation of radio waves by scattering as a result of irregularities or discontinuities in the physical properties of the troposphere. (RR)

**Unwanted Emissions.** Consist of spurious emissions and out-of-band emissions. (RR)

(Secs. 4, 303, 48 stat. 1066, 1082, as amended, 47 U.S.C. 154, 303)

Subpart B of Part 2 is revised as follows:

#### Subpart B—Allocation, Assignment, and Use of Radio Frequencies

- |       |                                                                                                               |
|-------|---------------------------------------------------------------------------------------------------------------|
| Sec.  |                                                                                                               |
| 2.100 | International regulations in force.                                                                           |
| 2.101 | Nomenclature of frequencies.                                                                                  |
| 2.102 | Assignment of frequencies.                                                                                    |
| 2.103 | Government use of non-Government frequencies.                                                                 |
| 2.104 | International Table of Frequency Allocations.                                                                 |
| 2.105 | United States Table of Frequency Allocations.                                                                 |
| 2.106 | Table of Frequency Allocations.                                                                               |
| 2.107 | Radio Astronomy Station notification.                                                                         |
| 2.108 | Policy regarding the use of the Fixed-Satellite Allocations in the 3.6-3.7, 4.5-4.8 and 5.85-5.925 GHz Bands. |



Authority: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.

## Subpart B—Allocation, Assignment, and Use of Radio Frequencies

### § 2.100 International regulations in force.

The international *Radio Regulations* (Geneva, 1982), became effective internationally on 1 January 1982, and nationally on September 6, 1983. They are incorporated to the extent practicable in this Part.

### § 2.101 Nomenclature of frequencies.

| Band No. | Frequency subdivision           | Frequency range  |
|----------|---------------------------------|------------------|
| 4        | VLF (very low frequency).       | Below 30 kHz.    |
| 5        | LF (low frequency).             | 30 to 300 kHz.   |
| 6        | MF (medium frequency).          | 300 to 3000 kHz. |
| 7        | HF (high frequency).            | 3 to 30 MHz.     |
| 8        | VHF (very high frequency).      | 30 to 300 MHz.   |
| 9        | UHF (ultra high frequency).     | 300 to 3000 MHz. |
| 10       | SHF (super high frequency).     | 3 to 30 GHz.     |
| 11       | EHF (extremely high frequency). | 30 to 300 GHz.   |
| 12       |                                 | 300 to 3000 GHz. |

### § 2.102 Assignment of frequencies.

(a) Except as otherwise provided in this section, the assignment of frequencies and bands of frequencies to all stations and classes of stations and the licensing and authorizing of the use of all such frequencies between 9 kHz and 400 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.

(b) On the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations the following exceptions to paragraph (a) of this section may be authorized:

(1) In individual cases the Commission may, without rule making proceedings, authorize on a temporary basis only, the use of frequencies not in accordance with the Table of Frequency Allocations for projects of short duration or emergencies where the Commission finds that important or exceptional circumstances require such utilization. Such authorizations are not intended to develop a service to be operated on frequencies other than those allocated such service.

(2) A station for the development of techniques or equipment to be employed by services set forth in column 5 of the Table of Frequency Allocations may be authorized the use of frequencies allocated to those services or classes of stations.

(3) Experimental stations pursuant to Part 5, may be authorized the use of any frequency or frequency band not exclusively allocated to the passive services (including the Radio Astronomy Service).

(4) In the event a band is reallocated so as to delete its availability for use by a particular service, the Commission may provide for the further interim use of the band by stations in that service for a temporary, specific period of time.

(c) Non-Government stations may be authorized to use Government frequencies in the bands above 25 MHz if the Commission finds, after consultations with the appropriate Government agency or agencies, that such use is necessary for coordination of Government and non-Government activities: Provided, however, that:

(1) Non-Government operation on Government frequencies shall conform with the conditions agreed upon by the Commission and the National Telecommunications and Information Administration (NTIA) (the more important of which are contained in paragraphs (c) (2), (3), and (4) of this section);

(2) Such operations shall be in accordance with NTIA rules governing the service to which the frequencies involved are allocated;

(3) Such operations shall not cause harmful interference to Government stations and, should harmful interference result, that the interfering non-Government operation shall immediately terminate; and

(4) Non-Government operation has been certified as necessary by the Government agency involved and this certification has been furnished, in writing, to the non-Government licensee with which communication is required.

(d) Aircraft stations may communicate with stations of the maritime mobile service. They shall then conform to those provisions of the international *Radio Regulations* which relate to the maritime mobile service. For this purpose aircraft stations should use the frequencies allocated to the maritime mobile service. However, having regard to interference which may be caused by aircraft stations at high altitudes, maritime mobile frequencies in the bands above 30 MHz shall not be used by aircraft stations in any specific area without the prior agreement of all administrations of the area in which interference is likely to be caused. In particular, aircraft stations operating in Region 1 should not use frequencies in the bands above 30 MHz allocated to the maritime mobile service by virtue of any agreement between administrations in that Region.

(e) Non-Government services operating on frequencies in the band 25–50 MHz must recognize that it is shared with various services of other countries; that harmful interference may be caused by skywave signals received from distant stations of all services of the United States and other countries radiating power on frequencies in this band; and that no protection from such harmful interference generally can be expected. Persons desiring to avoid such harmful interference should consider operation on available frequencies higher in the radio spectrum not generally subject to this type of difficulty.

(f) The stations of a service shall use frequencies so separated from the limits of a band allocated to that service as not to cause harmful interference to allocated services in immediately adjoining frequency bands.

(g) In the bands above 25 MHz which are allocated to the non-Government land mobile service, fixed stations may be authorized on the following conditions:

(1) That such stations are authorized in the service shown in Column 5 of the Table of Frequency Allocations in the band in question;

(2) That harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

(h) Special provisions regarding the use of spectrum allocated to the fixed and land mobile services below 25 MHz by non-Government stations.

(1) Only in the following circumstances will authority be extended to stations in the fixed service to operate on frequencies below 25 MHz.

(i) With respect to aeronautical fixed stations, only when a showing can be made that more suitable facilities are not available.

(ii) With respect to fixed stations, except aeronautical fixed stations, only to:

(A) Provide communication circuits in emergency and/or disaster situations, where safety of life and property are concerned;

(B) Provide standby and/or backup facilities to satellite and cable circuits used for international public correspondence;

(C) Provide standby and/or backup communications circuits to regular domestic communication circuits which have been disrupted by disasters and/or emergencies;

(D) Provide communication circuits wholly within the State of Alaska and



the United States insular areas in the Pacific; and

(E) Provide communication circuits to support operations which are highly important to the national interest and where other means of telecommunication are unavailable.

(2) Only in the following circumstances will authority be extended to stations in the land mobile service to operate below 25 MHz.

(i) Provide communication circuits in emergency and/or disaster situations, where safety of life and property are concerned;

(ii) Provide standby and/or backup communications circuits to regular domestic communication circuits which have been disrupted by disasters and/or emergencies;

(iii) Provide communication circuits wholly within the State of Alaska and the United States insular areas in the Pacific; and

(iv) Provide communication circuits to support operations which are highly important to the national interest and where other means of telecommunication are unavailable.

(3) Except in the State of Alaska and the United States Pacific insular areas, the Commission does not intend to seek international protection for assignments made pursuant to (h) (1)(ii) and (2) of this section; this results in the following constraints upon the circuits/assignments.

(i) The Commission will not accept responsibility for protection of the circuits from harmful interference caused by foreign operations.

(ii) In the event that a complaint of harmful interference resulting from operation of these circuits is received from a foreign source, the offending circuit(s) must cease operation on the particular frequency concerned.

(iii) In order to accommodate the situations described in (h)(3) (i) and (ii) of this section, equipments shall be capable of transmitting and receiving on any frequency in the bands assigned to the particular operation and capable of immediate change among the frequencies.

#### § 2.103 Government use of non-Government frequencies.

Government stations may be authorized to use non-Government frequencies in the bands above 25 MHz if the Commission finds that such use is necessary for coordination of Government and non-Government activities: Provided, however, That:

(a) Government operation on non-Government frequencies shall conform with the conditions agreed upon by the Commission and the National

Telecommunications and Information Administration (the more important of which are contained in paragraphs (b), (c), and (d) of this section);

(b) Such operations shall be in accordance with Commission rules governing the service to which the frequencies involved are allocated;

(c) Such operations shall not cause harmful interference to non-Government stations and, should harmful interference result, that the interfering Government operation shall immediately terminate; and

(d) Government operation has been certified as necessary by the non-Government licensees involved and this certification has been furnished, in writing, to the Government agency with which communication is required.

#### § 2.104 International Table of Frequency Allocations.

(a) The International Table of Frequency Allocations (columns 1, 2 and 3 of § 2.106) is included for international purposes only.

(b) *Regions.* To facilitate the international allocating of the radio spectrum, the International Telecommunication Union (ITU) has divided the world into three Regions<sup>1</sup> as shown in Figure 1 and described below:

(1) Region 1 includes the area limited on the East by line A (lines A, B and C are defined below) and on the West by line B, excluding any of the territory of Iran which lies between these limits. It also includes that part of the territory of Turkey and the Union of Soviet Socialist Republics (U.S.S.R.) lying outside of these limits, the territory of the Mongolian Peoples' Republic, and the area to the North of the U.S.S.R. which lies between lines A and C.

(2) Region 2 includes the area limited on the East by line B and the West by line C.

(3) Region 3 includes the area limited on the East by line C and on the West by line A, except the territories of the Mongolian Peoples' Republic, Turkey, the territory of the U.S.S.R. and the area to the North of the U.S.S.R. It also includes that part of the territory of Iran lying outside of those limits.

(4) The lines A, B and C are defined as follows:

(i) Line A extends from the North Pole along meridian 40° West of Greenwich to parallel 40° North; thence by great circle arc to the intersection of meridian 60° East and the Tropic of Cancer; thence along the meridian 60° East to the South Pole.

<sup>1</sup> It should be noted that where the words "region" or "regional" are without a capital "R", they do not relate to the three Regions here defined for purpose of frequency allocation.

(ii) Line B extends from the North Pole along meridian 10° West of Greenwich to its intersection with parallel 72° North; thence by great circle arc to the intersection of meridian 50° West and parallel 40° North; thence by great circle arc to the intersection of meridian 20° West and to the South Pole.

(iii) Line C extends from the North Pole by great circle arc to the intersection of parallel 65°30' North of the international boundary in Bering Strait; thence by great circle arc to the intersection of meridian 165° East of Greenwich and parallel 50° North; thence by great circle arc to the intersection of meridian 170° West and parallel 10° North; thence along parallel 10° North to its intersection with meridian 120° West; thence along meridian 120° West to the South Pole.

(c) *Areas.* To further assist in the international allocation of the radio spectrum, the ITU has established several special geographical areas and they are defined below.

(1) The "African Broadcasting Area" consists of:

(i) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North;

(ii) Islands in the Indian Ocean west of meridian 60° East of Greenwich, situated between the parallel 40° South and the great circle arc joining the points 45° East, 11°30' North and 60° East, 15° North; and

(iii) Islands in the Atlantic Ocean east of Line B, situated between the parallel 40° South and 30° North.

(2) The "European Broadcasting Area" is bounded on the West by the western boundary of Region 1, on the East by the meridian 40° East of Greenwich and on the South by the parallel 30° North so as to include the western part of the U.S.S.R., the northern part of Saudi Arabia and that part of those countries bordering the Mediterranean within these limits. In addition, Iraq and Jordan are included in the European Broadcasting Area.

(3) The "European Maritime Area" is bounded on the North by a line extended along parallel 72° North from its intersection with meridian 55° East of Greenwich to its intersection with meridian 5° West, then along meridian 5° West to its intersection with parallel 67° North, thence along parallel 67° North to its intersection with meridian 30° West; on the West by a line extending along meridian 30° West to its intersection with parallel 30° North; on the South by a line extending along parallel 30° North to a line extending along meridian 43° East to its



intersection with parallel 60° North, thence along parallel 60° North to its intersection with meridian 55° East and thence along meridian 55° East to its intersection with parallel 72° North.

(4) The "Tropical Zone" (see Figure 1) is defined as:

(i) The whole of that area in Region 2 between the Tropics of Cancer and Capricorn;

(ii) The whole of that area in Region 1 and 3 contained between the parallel 30° North and 35° South with the addition of:

(iii) The area contained between the meridian 40° East and 80° East of Greenwich and the parallels 30° North and 40° and

(iv) That part of Libya North of parallel 30° North.

(v) In Region 2, the Tropical Zone may be extended to parallel 33° North, subject to special agreements between the countries concerned in that Region.

(5) A sub-Region is an area consisting of two or more countries in the same Region.

#### (d) Categories of Service.

(1) Any segment of the radio spectrum can be allocated to one or more radio services<sup>2</sup> either on a worldwide or Regional basis. In the case where an allocation has been made to more than one service, such services are listed in the following order:

(i) Services the names of which are printed in "capitals" [example: FIXED]; these are called "primary" services;

(ii) Services, the names of which are printed in "capitals" between oblique strokes [example: /RADIOLOCATION/]; these are called "permitted" services;

(iii) Services, the names of which are printed in "normal characters" [example: Mobile]; these are called "secondary" services.

(2) Additional remarks pertaining to an allocation are printed in "normal characters" [example: MOBILE except aeronautical mobile].

(3) Permitted and primary services have equal rights, except that, in the preparation of frequency plans, the primary services, as compared with the permitted services, shall have prior choice of frequencies.

#### (4) Stations of a secondary service:

(i) Shall not cause harmful interference to stations of primary or permitted services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

(ii) Cannot claim protection from harmful interference from stations of a

primary or permitted service to which frequencies are already assigned or may be assigned at a later date;

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

(5) Where a band is indicated in a footnote of the International Table (i.e., columns 1, 2, and 3 of § 2.106) as allocated to a service "on a secondary basis" in an area smaller than a Region, or in a particular country, this is a secondary service.

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

#### (e) Additional allocations.

(1) Where a band is indicated in a footnote of the International Table as "also allocated" to a service in an area smaller than a Region, or in a particular country, this is an "additional" allocation, i.e., an allocation which is added in this country area or in this country to the service or services which are indicated in the International Table.

(2) If the footnote does not include any restriction on the service or services concerned apart from the restriction to operate only in a particular area or country, stations of this service or these services shall have equality of right to operate with stations of the other primary service or services indicated in the International Table.

(3) If restrictions are imposed on an additional allocation in addition to the restriction to operate only in a particular area or country, this is indicated in the footnote of the International Table.

#### (f) Alternative allocations.

(1) Where a band is indicated in a footnote of the International Table as "allocated" to one or more services in an area smaller than a Region, or in a particular country, this is an "alternative" allocation, i.e., an allocation which replaces, in this area or in this country, the allocations indicated in the International Table.

(2) If the footnote does not include any restriction on stations of the service or services concerned, apart from the restriction to operate only in a particular area or country, these stations of such a service or services shall have an equality of right to operate with stations of the primary service or services, shall have an equality of right to operate with stations of the primary service or services, indicated in the International

Table, to which the band is allocated in other areas or countries.

(3) If restrictions are imposed on stations of a service to which an alternative allocation is made, in addition to the restriction to operate only in a particular country or area, this is indicated in the footnote.

#### (g) Miscellaneous provision.

(1) Where it is indicated that a service may operate in a specific frequency band subject to not causing harmful interference, this means also that this service cannot claim protection from harmful interference caused by other services to which the band is allocated under Chapter III of the international Radio Regulations.

(2) Except if otherwise specified in a footnote, the term "fixed service" does not include systems using ionospheric scatter propagation.

#### (h) Format of the International Table.

(1) The heading of the International Table includes three columns (columns number 1, 2 and 3 of § 2.106), each of which corresponds to one of the Regions. Where an allocation occupies the whole of the width of the Table or only two of the three columns, this is a world-wide allocation or a Regional allocation, respectively.

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

(3) Within each of the categories specified in paragraph (c)(1) of this section, services are listed in alphabetical order according to the French language.<sup>3</sup> The order of listing does not indicate relative priority within each category.

(4) In the case where there is a parenthetical addition to an allocation in the International Table [example: FIXED-SATELLITE (space-to-earth)], that service allocation is restricted to the type of operation so indicated.

(5) The footnote references which appear in the International Table below the allocated service or services apply to the whole of the allocation concerned.

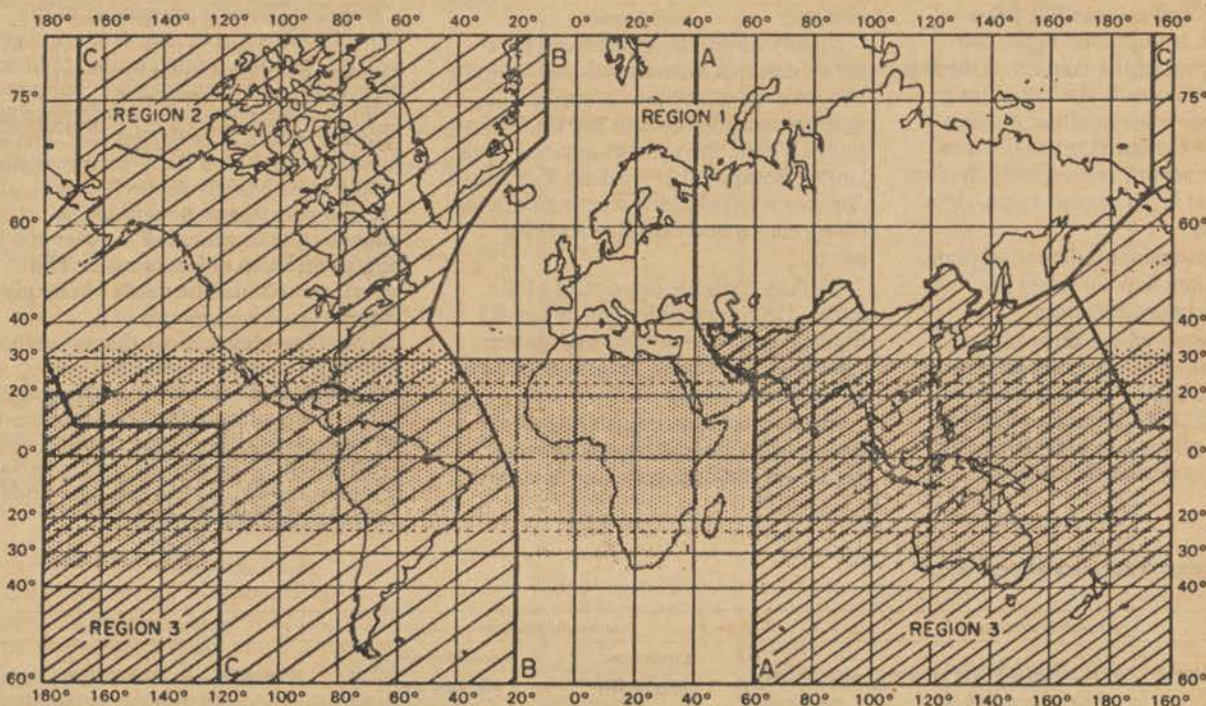
(6) The footnote references which appear to the right of the name of a service are applicable only to that particular service.

(7) In certain cases, the names of countries appearing in the footnotes have been simplified in order to shorten the text.

<sup>2</sup> Definitions of the various radio services used in columns 1 through 3 of § 2.106 are contained in § 2.1.

<sup>3</sup> French is used to keep this table consistent with the International Table as published by ITU.





The shaded part represents the Tropical Zone as defined in Nos. 406 to 410 and 411.

Figure 1. Chart of the International Regions and Zones as defined in the International Table of Frequency Allocations. [Note: The shaded part represents the Tropical Zone as defined by § 2.104(8)(4).]

#### § 2.105 United States Table of Frequency Allocations.

(a) The United States Table of Frequency Allocations (columns 4 through 7 of § 2.106) is based on the International plan for Region 2 because the relevant area of jurisdiction is located primarily in Region 2<sup>1</sup> (i.e., the 50 States, the District of Columbia, the Caribbean insular areas<sup>2</sup> and some of the Pacific insular areas<sup>3</sup>).<sup>4</sup> Because there is a need to provide radio spectrum for both federal government and non-federal government operations, the United States Table is divided into the Government Table of Frequency Allocation and the Non-Government Table of Frequency Allocations. The Government plan, as shown in column 4 of § 2.106, is administered by the National Telecommunications and Information Administration (NTIA)<sup>5</sup>,

whereas the non-Government plan, as shown in column 5 of § 2.106, is administered by the Federal Communications Commission (FCC)<sup>6</sup>.

(b) In the United States, radio spectrum may be allocated to either Government or non-Government use exclusively, or for shared use. In the case of shared use, the type of service(s) permitted need not be the same [e.g., Government FIXED, non-Government MOBILE]. The terms used to designate categories of service<sup>7</sup> in columns 4 and 5 of § 2.106, correspond to the terms employed by the International Telecommunication Union (ITU) in the international *Radio Regulations*.

#### (c) Categories of services.

(1) Any segment of the radio spectrum may be allocated to the Government and/or non-Government sectors either on an exclusive or shared basis for use by one or more radio services. In the case where an allocation has been made to more than one service, such services are listed in the following order:

(i) Services, the names of which are printed in "capitals" [example: FIXED]; these are called "primary" services;

(ii) Services, the names of which are printed in capitals between oblique strokes [example: /RADIOLOCATION/]; these are called "permitted services";

(iii) Services, the names of which are printed in "normal characters" [example: Mobile]; these are called "secondary" services.

(2) Permitted and primary services have equal rights, except that, in the preparation of frequency plans, the primary services, as compared with the permitted services, shall have prior choice of frequencies.

(3) Stations of a secondary service:

(i) Shall not cause harmful interference to stations of primary or permitted services to which frequencies are already assigned or to which frequencies may be assigned at a later date.

(ii) Cannot claim protection from harmful interference from stations of a primary or permitted service to which frequencies are already assigned or may be assigned at a later date; and

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

(d) *Format of the United States Table.*

<sup>1</sup> See § 2.104(a)(1) for definition of Region 2.

<sup>2</sup> The Caribbean insular areas are: The Commonwealth of Puerto Rico; the unincorporated territory of the United States Virgin Islands; and Navassa Island, Quita Sueno Bank, Roncador Bank, Serrana Bank and Serranilla Bank.

<sup>3</sup> The Pacific insular areas located in Region 2 are: Johnston Island and Midway Island.

<sup>4</sup> The operation of stations in the Pacific insular areas located in Region 3 are generally governed by the International plan for Region 3 (i.e., column 3 of § 2.106). The Pacific insular areas located in Region 3 are: the Commonwealth of the Northern Mariana Islands; the unincorporated territory of American Samoa; the unincorporated territory of Guam; and

Baker Island, Howland Island, Jarvis Island, Kingman Reef, Palmyra Island and Wake Island.

<sup>5</sup> Section 305(a) of the Communications Act of 1934, as amended; Executive Order 12046 (28 March 1978) and Department of Commerce Organization Order 10-10 (9 May 1979).

<sup>6</sup> The Communications Act of 1934, as amended.



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

(2) The Government allocation plan, given in column 4, is included for informational purposes only.

(3) In the case where there is a parenthetical addition to an allocation in the United States Table [example: FIXED-SATELLITE (space-to-earth)], that service allocation is restricted to the type of operation so indicated.

(4) The following symbols are used to designate footnotes in the United States Table:

(i) Any footnote not prefixed by a letter, denotes an international footnote. Where such a footnote is applicable, without modification, to the United States Table, the symbol appears in the United States Table (column 4 or 5) and denotes a stipulation affecting both the Government and non-Government plans.

(ii) Any footnote consisting of the letters US followed by one or more digits, e.g., US, denotes a stipulation affecting both the Government and non-Government plans.

(iii) Any footnote consisting of the letters NG followed by one or more digits, e.g., NG1, denotes a stipulation

applicable only to the non-Government plan (column 5).

(iv) Any footnote consisting of the letter G following by one or more digits, e.g., G1, denotes a stipulation applicable only to the Government plan (column 4).

(5) Column 6 provides a reference to indicate which Rule Part(s) (e.g., Private Land Mobile Radio Services, Domestic Public Land Mobile Radio Services, etc.) are given assignments within the allocation plan specified in column 5 for any given band of frequencies. The exact use that can be made of any given frequency or frequencies (e.g., channelling plans, allowable emissions, etc.) is given in the Rule Part(s) so indicated. The Rule Parts in this column are not allocations. They are provided for informational purposes only.

(6) Column 7 is used to denote certain frequencies which have national and/or international significance.

#### § 2.106 Table of Frequency Allocations.

| International table             |                                                                                                   |                                                                | United States table                                                  |                                                                   | FCC use designators                                              |                               |
|---------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------|
| Region 1—allocation kHz         | Region 2—allocation kHz                                                                           | Region 3—allocation kHz                                        | Government<br>Allocation kHz                                         | Non-Government<br>Allocation kHz                                  | Rule part(s)                                                     | Special-use frequencies       |
| (1)                             | (2)                                                                                               | (3)                                                            | (4)                                                                  | (5)                                                               | (6)                                                              | (7)                           |
| Below 9                         | (Not allocated).<br>444 445                                                                       |                                                                | Below 9.<br>(Not allocated).<br>444 445                              | Below 9.<br>(Not allocated).<br>444 445                           |                                                                  |                               |
| 9-14                            | RADIONAVIGATION.                                                                                  |                                                                | 9-14<br>RADIONAVIGATION.<br>US18 US294                               | 9-14<br>RADIONAVIGATION.<br>US18 US294                            |                                                                  |                               |
| 14-19.95                        | FIXED.<br>MARITIME MOBILE<br>448<br>445 447                                                       |                                                                | 14-19.95<br>FIXED.<br>MARITIME MOBILE.<br>US288 US294                | 14-19.95<br>Fixed.<br>US288 US294                                 | INTERNATIONAL FIXED<br>PUBLIC (23).                              |                               |
| 19.95-20.05                     | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (20<br>kHz).                                             |                                                                | 19.95-20.05<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>US294    | 19.95-20.05<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>US294 |                                                                  | 20 kHz Standard<br>Frequency. |
| 20.05-70                        | FIXED.<br>MARITIME MOBILE<br>448<br>447 449                                                       |                                                                | 20.05-59<br>FIXED.<br>MARITIME MOBILE.<br>US288 294                  | 20.05-59<br>FIXED.<br>US288 294                                   | INTERNATIONAL FIXED<br>PUBLIC (23).                              |                               |
|                                 |                                                                                                   |                                                                | 59-61<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>US294          | 59-61<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>US294       |                                                                  | 60kHz Standard<br>Frequency.  |
|                                 |                                                                                                   |                                                                | 61-70<br>FIXED.<br>MARITIME MOBILE.<br>US288 US294                   | 61-70<br>FIXED.<br>US288 US294                                    | INTERNATIONAL<br>FIXED PUBLIC (23).                              |                               |
| 70-72<br>RADIONAVIGATION<br>451 | 70-90<br>FIXED.<br>MARITIME MOBILE<br>448<br>MARITIME<br>RADIONAVIGATION<br>451<br>Radiolocation. | 70-72<br>RADIONAVIGATION 451<br>Fixed.<br>Maritime Mobile 448. | 70-90<br>FIXED.<br>MARITIME MOBILE.<br>Radiolocation.<br>US288 US294 | 70-90<br>FIXED.<br>Radiolocation.<br>US288 US294                  | INTERNATIONAL FIXED<br>PUBLIC (23).<br>Private Land Mobile (90). |                               |



| International table                                                          |                                                                                               |                                                                            | United States table                                                      |                                                                          | FCC use designators                                                                     |                         |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation kHz                                                      | Region 2—allocation kHz                                                                       | Region 3—allocation kHz                                                    | Government<br>Allocation kHz                                             | Non-Government<br>Allocation kHz                                         | Rule part(s)                                                                            | Special-use frequencies |
| (1)                                                                          | (2)                                                                                           | (3)                                                                        | (4)                                                                      | (5)                                                                      | (6)                                                                                     | (7)                     |
| 72-84<br>FIXED.<br>MARITIME MOBILE<br>448<br>RADIONAVIGATION<br>451<br>447   | 452                                                                                           | 72-84<br>FIXED.<br>MARITIME MOBILE<br>448<br>RADIONAVIGATION<br>451        |                                                                          |                                                                          |                                                                                         |                         |
| 84-86<br>RADIONAVIGATION<br>451                                              |                                                                                               | 84-86<br>RADIONAVIGATION<br>451<br>Fixed,<br>Maritime Mobile 448<br>450    |                                                                          |                                                                          |                                                                                         |                         |
| 86-90<br>FIXED.<br>MARITIME MOBILE<br>448<br>RADIONAVIGATION<br>447          |                                                                                               | 86-90<br>FIXED.<br>MARITIME MOBILE<br>448<br>RADIONAVIGATION<br>451        |                                                                          |                                                                          |                                                                                         |                         |
| 90-110                                                                       | RADIONAVIGATION<br>453<br>Fixed,<br>Maritime Mobile 448<br><br>454                            |                                                                            | 90-110<br>RADIONAVIGATION<br>453<br><br>US18 US104 US294                 | 90-110<br>RADIONAVIGATION<br>453<br><br>US18 US104 US294                 | Private Land Mobile (90).                                                               |                         |
| 110-112<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION.<br><br>454         | 110-130<br>FIXED.<br>MARITIME MOBILE.<br>MARITIME<br>RADIONAVIGATION<br>451<br>Radiolocation. | 110-112<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION<br>451<br><br>454 | 110-130<br>FIXED.<br>MARITIME MOBILE.<br>Radiolocation.<br><br>454 US294 | 110-130<br>FIXED.<br>MARITIME MOBILE.<br>Radiolocation.<br><br>454 US294 | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>Private Land Mobile (90). |                         |
| 112-115<br>RADIONAVIGATION<br>451                                            | 452 454                                                                                       | 112-117.6<br>RADIONAVIGATION<br>451<br>Fixed,<br>Maritime Mobile.          |                                                                          |                                                                          |                                                                                         |                         |
| 115-117.6<br>RADIONAVIGATION<br>451<br>Fixed,<br>Maritime Mobile.<br>454 456 |                                                                                               | 454 455                                                                    |                                                                          |                                                                          |                                                                                         |                         |
| 117.6-126.0<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION<br>451<br>454   |                                                                                               | 117.6-126.0<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION<br>451<br>454 |                                                                          |                                                                          |                                                                                         |                         |
| 126-129<br>RADIONAVIGATION<br>451                                            |                                                                                               | 126-129<br>RADIONAVIGATION<br>451<br>Fixed,<br>Maritime Mobile.<br>454 455 |                                                                          |                                                                          |                                                                                         |                         |
| 129-130<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION<br>451<br>454       |                                                                                               | 129-130<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION<br>451<br>454     |                                                                          |                                                                          |                                                                                         |                         |
| 130.0-148.5<br>MARITIME MOBILE.<br>/FIXED/.<br><br>454 457 458               | 130-160<br>FIXED.<br>MARITIME MOBILE.                                                         | 130-160<br>FIXED.<br>MARITIME MOBILE.<br>RADIONAVIGATION.                  | 130-160<br>FIXED.<br>MARITIME MOBILE.                                    | 130-160<br>FIXED.<br>MARITIME MOBILE.                                    |                                                                                         |                         |
| 148.5-255.0                                                                  | 454                                                                                           | 454                                                                        | 454 US294                                                                | 454 US294                                                                |                                                                                         |                         |
| BROADCASTING                                                                 | 160-190<br>FIXED.<br><br>459                                                                  | 160-190<br>FIXED.<br>Aeronautical<br>Radionavigation.                      | 160-190<br>FIXED.<br>MARITIME MOBILE.<br><br>459 US294                   | 160-190<br>FIXED.<br><br>459 US294                                       | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                              |                         |



| International table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                   |                                                                                                  | United States table                                                                                                                                |                                                                                                                                                    | FCC use designators                   |                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------|
| Region 1—allocation kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Region 2—allocation kHz                                                                                           | Region 3—allocation kHz                                                                          | Government<br>Allocation kHz                                                                                                                       | Non-Government<br>Allocation kHz                                                                                                                   | Rule part(s)                          | Special-use frequencies                     |
| (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | (2)                                                                                                               | (3)                                                                                              | (4)                                                                                                                                                | (5)                                                                                                                                                | (6)                                   | (7)                                         |
| 458 460 461 462<br>255-283.5<br>BROADCASTING.<br>/AERONAUTICAL<br>RADIONAVIGATION/<br>463<br>458 462 464<br>283.5-315.0<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466<br>/AERONAUTICAL<br>RADIONAVIGATION/.<br>458 465<br>315-325<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Maritime Radionavigation<br>(radiobeacons) 466<br>465 467<br>325-405<br>AERONAUTICAL<br>RADIONAVIGATION.<br>465<br>405-415<br>RADIONAVIGATION<br>468<br>465<br>415-435<br>AERONAUTICAL<br>RADIONAVIGATION.<br>/MARITIME MOBILE/<br>470<br>465<br>435-495<br>MARITIME MOBILE<br>470<br>Aeronautical<br>Radionavigation.<br>465 471<br>495-505 | 190-200<br>AERONAUTICAL<br>RADIONAVIGATION.                                                                       |                                                                                                  | 190-200<br>AERONAUTICAL<br>RADIONAVIGATION.<br>US18 US226 US294                                                                                    | 190-200<br>AERONAUTICAL<br>RADIONAVIGATION.<br>US18 US226 US294                                                                                    |                                       |                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 200-285<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.                                               |                                                                                                  | 200-275<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.<br>US18 US294                                                                  | 200-275<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.<br>US18 US294                                                                  | AVIATION (87).                        |                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                   |                                                                                                  | 275-285<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.<br>Maritime Radionavigation<br>(radiobeacons).<br>US18 US294                   | 275-285<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.<br>Maritime Radionavigation<br>(radiobeacons).<br>US18 US294                   |                                       |                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 285-315<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466<br>/AERONAUTICAL<br>RADIONAVIGATION/.<br>458 465     |                                                                                                  | 285-325<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466<br>Aeronautical<br>Radionavigation<br>(radiobeacons).<br>US18 US294                   | 285-325<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466<br>Aeronautical<br>Radionavigation<br>(radiobeacons).<br>US18 US294                   | AVIATION (87).                        |                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 315-325<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466<br>Aeronautical<br>Radionavigation.                  | 315-325<br>AERONAUTICAL<br>RADIONAVIGATION.<br>MARITIME<br>RADIONAVIGATION<br>(radiobeacons) 466 |                                                                                                                                                    |                                                                                                                                                    |                                       |                                             |
| 465                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 325-335<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile<br>Maritime Radionavigation<br>(radiobeacons). | 325-405<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.                              | 325-335<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>Aeronautical Mobile.<br>Maritime Radionavigation<br>(radiobeacons).<br>US18 US294 | 325-335<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>Aeronautical Mobile.<br>Maritime Radionavigation<br>(radiobeacons).<br>US18 US294 | AVIATION (87).                        |                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 335-405<br>AERONAUTICAL<br>RADIONAVIGATION.<br>Aeronautical Mobile.                                               |                                                                                                  | 335-405<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>Aeronautical Mobile.<br>US18 US294                                                | 335-405<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>Aeronautical Mobile.<br>US18 US294                                                | AVIATION (87).                        |                                             |
| 405-415<br>RADIONAVIGATION<br>468<br>465                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 405-415<br>RADIONAVIGATION<br>468<br>Aeronautical Mobile.                                                         |                                                                                                  | 405-415<br>RADIONAVIGATION<br>468<br>Aeronautical Mobile.<br>US18 US294                                                                            | 405-415<br>RADIONAVIGATION<br>468<br>Aeronautical Mobile.<br>US18 US294                                                                            | AVIATION (87).                        |                                             |
| 415-435<br>AERONAUTICAL<br>RADIONAVIGATION.<br>/MARITIME MOBILE/<br>470<br>465                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 415-495<br>MARITIME MOBILE<br>470<br>469 471                                                                      |                                                                                                  | 415-435<br>AERONAUTICAL<br>RADIONAVIGATION.<br>MARITIME MOBILE<br>470<br>US294                                                                     | 415-435<br>AERONAUTICAL<br>RADIONAVIGATION.<br>MARITIME MOBILE<br>470<br>US294                                                                     | AVIATION (87).<br>MARITIME (81 & 83). |                                             |
| 435-495<br>MARITIME MOBILE<br>470<br>Aeronautical<br>Radionavigation.<br>465 471                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                   |                                                                                                  | 435-495<br>MARITIME MOBILE<br>470<br>471 US231 US294                                                                                               | 435-495<br>MARITIME MOBILE<br>470<br>471 US231 US294                                                                                               | MARITIME (81 & 83).                   |                                             |
| 495-505                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MOBILE (distress and<br>calling).<br>472                                                                          |                                                                                                  | 495-505<br>MOBILE (distress and<br>calling).<br>472                                                                                                | 495-505<br>MOBILE (distress and<br>calling).<br>472                                                                                                | MARITIME (81 & 83).                   | 500 kHz: Distress and<br>calling frequency. |



| International table                                                               |                                                                                                                |                                                                                                                    | United States table                                                                                                           |                                                                                                                               | FCC use designators                                                                                          |                                     |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Region 1—allocation kHz                                                           | Region 2—allocation kHz                                                                                        | Region 3—allocation kHz                                                                                            | Government<br>Allocation kHz                                                                                                  | Non-Government<br>Allocation kHz                                                                                              | Rule part(s)                                                                                                 | Special-use frequencies             |
| (1)                                                                               | (2)                                                                                                            | (3)                                                                                                                | (4)                                                                                                                           | (5)                                                                                                                           | (6)                                                                                                          | (7)                                 |
| 505.0-526.5<br>MARITIME MOBILE<br>470<br>/AERONAUTICAL<br>RADIONAVIGATION/<br>473 | 505.0-510.0<br>MARITIME MOBILE<br>470<br><br>471<br><br>510-525<br>MOBILE.<br>AERONAUTICAL<br>RADIONAVIGATION. | 505.0-526.5<br>MARITIME MOBILE<br>470<br>/AERONAUTICAL<br>RADIONAVIGATION/.<br>Aeronautical Mobile<br>Land Mobile. | 505-510<br>MARITIME MOBILE<br>470<br><br>471                                                                                  | 505-510<br>MARITIME MOBILE<br>470<br><br>471                                                                                  | MARITIME (81 & 83).                                                                                          |                                     |
|                                                                                   |                                                                                                                |                                                                                                                    | 510-525<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>MARITIME MOBILE<br>(Ships only).<br>US14 US18<br>US225 US232 | 510-525<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>MARITIME MOBILE<br>(Ships only).<br>US14 US18<br>US225 US232 | AVIATION (87).<br>Maritime (81 & 83).                                                                        |                                     |
| 465 471 474 475<br>476                                                            | 525-535                                                                                                        | 471                                                                                                                | 525-535                                                                                                                       | 525-535                                                                                                                       |                                                                                                              |                                     |
| 526.5-1606.5<br>BROADCASTING.                                                     | BROADCASTING 477<br>AERONAUTICAL<br>RADIONAVIGATION.                                                           | 526.5-535.0<br>BROADCASTING.<br>Mobile.<br><br>479                                                                 | MOBILE.<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>US18 US221 US239                                             | MOBILE.<br>AERONAUTICAL<br>RADIONAVIGATION<br>(radiobeacons).<br>US18 US221 US239                                             | AVIATION (87)<br>PRIVATE LAND MOBILE<br>(90)                                                                 | 530 kHz: Travelers<br>information.  |
|                                                                                   | 535-1605<br>BROADCASTING.                                                                                      | 535.0-1606.5<br>BROADCASTING.                                                                                      | 535-1605                                                                                                                      | 535-1605<br>BROADCASTING<br>NG 128                                                                                            | RADIO BROADCASTING<br>(AM) (73).                                                                             |                                     |
| 478                                                                               | 1605-1625                                                                                                      |                                                                                                                    | 1605-1615                                                                                                                     | 1605-1615                                                                                                                     |                                                                                                              |                                     |
| 1606.5-1625.0                                                                     | BROADCASTING 480                                                                                               | 1606.5-1800                                                                                                        | MOBILE.                                                                                                                       | MOBILE.                                                                                                                       | AUXILIARY<br>BROADCASTING (74).<br>PRIVATE LAND MOBILE<br>(90).                                              | 1610 kHz: Travelers<br>information. |
| MARITIME MOBILE.<br>/FIXED/.<br>/LAND MOBILE/.<br><br>483 484                     | 481                                                                                                            | FIXED.<br>MOBILE.<br>RADIOLOCATION.<br>RADIONAVIGATION.<br>482                                                     | 480 US221                                                                                                                     | 480 US221                                                                                                                     |                                                                                                              |                                     |
|                                                                                   |                                                                                                                |                                                                                                                    | 1615-1625                                                                                                                     | 1615-1625<br>BROADCASTING 480                                                                                                 | AUXILIARY<br>BROADCASTING (74).<br>Private Land Mobile (90).                                                 |                                     |
|                                                                                   |                                                                                                                |                                                                                                                    | 480 US237                                                                                                                     | US237                                                                                                                         |                                                                                                              |                                     |
| 1625-1635<br>RADIOLOCATION 487                                                    | 1625-1705<br>BROADCASTING 480<br>/FIXED/.<br>/MOBILE/.<br>Radiolocation                                        |                                                                                                                    | 1625-1705<br>Radiolocation.                                                                                                   | 1625-1705<br>BROADCASTING 480<br>Radiolocation.                                                                               | AUXILIARY<br>BROADCASTING (74).<br>Private Land Mobile (90).                                                 |                                     |
| 485 486                                                                           |                                                                                                                |                                                                                                                    | 480 US238                                                                                                                     | US238                                                                                                                         |                                                                                                              |                                     |
| 1635-1800                                                                         | 481                                                                                                            |                                                                                                                    |                                                                                                                               |                                                                                                                               |                                                                                                              |                                     |
| MARITIME MOBILE<br>/FIXED/.<br>/LAND MOBILE/.<br><br>483 484 488                  | 1705-1800<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.<br>AERONAUTICAL<br>RADIONAVIGATION.                           |                                                                                                                    | 1705-1800<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.                                                                              | 1705-1800<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.                                                                              | DISASTER (99).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                     |
|                                                                                   |                                                                                                                |                                                                                                                    | US240                                                                                                                         | US240                                                                                                                         |                                                                                                              |                                     |
| 1800-1810<br>RADIOLOCATION 487                                                    | 1800-1850<br>AMATEUR.                                                                                          | 1800-2000<br>AMATEUR.<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIONAVIGATION.<br>Radiolocation.     | 1800-1900                                                                                                                     | 1800-1900<br>AMATEUR.                                                                                                         | AMATEUR (97).                                                                                                |                                     |
| 485 486                                                                           |                                                                                                                |                                                                                                                    |                                                                                                                               |                                                                                                                               |                                                                                                              |                                     |
| 1810-1850<br>AMATEUR.<br>490 491 492 493                                          | 489                                                                                                            |                                                                                                                    |                                                                                                                               |                                                                                                                               |                                                                                                              |                                     |



| International table                                                                                       |                                                                                                                |                         | United States table                                                 |                                                                         | FCC use designators                                                                                          |                                     |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Region 1—allocation kHz                                                                                   | Region 2—allocation kHz                                                                                        | Region 3—allocation kHz | Government<br>Allocation kHz                                        | Non-Government<br>Allocation kHz                                        | Rule part(s)                                                                                                 | Special-use frequencies             |
| (1)                                                                                                       | (2)                                                                                                            | (3)                     | (4)                                                                 | (5)                                                                     | (6)                                                                                                          | (7)                                 |
| 1850-2000<br>FIXED.<br>MOBILE except<br>aeronautical mobile.                                              | 1850-2000<br>AMATEUR.<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIOLOCATION.<br>RADIONAVIGATION. |                         |                                                                     |                                                                         |                                                                                                              |                                     |
| 484 488 495                                                                                               | 489 494                                                                                                        | 489                     | 1900-2000<br>RADIOLOCATION.<br><br>US290                            | 1900-2000<br>RADIOLOCATION.<br><br>US290 NG15                           | PRIVATE LAND MOBILE<br>(90).<br>Amateur (97).                                                                |                                     |
| 2000-2025<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br>484 495                            | 2000-2065<br>FIXED.<br>MOBILE.                                                                                 |                         | 2000-2065<br>FIXED.<br>MOBILE.                                      | 2000-2065<br>MARITIME MOBILE.                                           | MARITIME (81 & 83).                                                                                          |                                     |
| 2025-2045<br>FIXED.<br>MOBILE except<br>aeronautical Mobile<br>(R).<br>Meteorological Aids 496<br>484 495 |                                                                                                                |                         |                                                                     | NG19                                                                    |                                                                                                              |                                     |
| 2045-2160                                                                                                 |                                                                                                                |                         |                                                                     |                                                                         |                                                                                                              |                                     |
| MARITIME MOBILE.<br>/FIXED/.<br>/LAND MOBILE/.<br>483 484                                                 | 2065-2107<br><br>MARITIME MOBILE<br>497<br>498                                                                 |                         | 2065-2107<br><br>MARITIME MOBILE<br>497                             | 2065-2107<br><br>MARITIME MOBILE<br>497                                 | MARITIME (81 & 83).                                                                                          |                                     |
| 2160-2170<br>RADIOLOCATION 487<br><br>485 488 499                                                         | 2107-2170<br><br>FIXED.<br>MOBILE.                                                                             |                         | 2107-2170<br><br>FIXED.<br>MOBILE.                                  | 2107-2170<br><br>FIXED.<br>MARITIME MOBILE.<br>LAND MOBILE.<br><br>NG19 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                     |
| 2170.0-2173.5                                                                                             | MARITIME MOBILE.                                                                                               |                         | 2170-2173.5<br>MARITIME MOBILE.                                     | 2170-2173.5<br>MARITIME MOBILE.                                         | MARITIME (81 & 83).                                                                                          |                                     |
| 2173.5-2190.5                                                                                             | MOBILE (distress and<br>calling).<br>500 501                                                                   |                         | 2173.5-2190.5<br>MOBILE (distress and<br>calling).<br>500 501 US279 | 2173.5-2190.5<br>MOBILE (distress and<br>calling).<br>500 501 US279     | AVIATION (87).<br>MARITIME (81 & 83).                                                                        | 2 182 kHz: Distress and<br>calling. |
| 2190.5-2194.0                                                                                             | MARITIME MOBILE.                                                                                               |                         | 2190.5-2194<br>MARITIME MOBILE                                      | 2190.5-2194<br>MARITIME MOBILE                                          | MARITIME (81 & 83).                                                                                          |                                     |
| 2194-2300<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br>484 495 502                        | 2194-2300<br>FIXED.<br>MOBILE.<br><br>502                                                                      |                         | 2194-2495<br>FIXED.<br>MOBILE.                                      | 2194-2495<br>FIXED.<br>LAND MOBILE.<br>MARITIME MOBILE.                 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                     |
| 2300-2498<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br>BROADCASTING 503<br>495            | 2300-2495<br>FIXED.<br>MOBILE.<br>BROADCASTING 503.                                                            |                         |                                                                     | NG19                                                                    |                                                                                                              |                                     |
| 2498-2501                                                                                                 | 2495-2501<br><br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (2500<br>kHz).                                       |                         | 2495-2505<br><br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.          | 2495-2505<br><br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.              |                                                                                                              | 2500 kHz: Standard<br>frequency.    |



| International table                                                                |                                                                                    |                                               | United States table                                                            |                                                                                | FCC use designators                                                                                          |                         |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation kHz                                                            | Region 2—allocation kHz                                                            | Region 3—allocation kHz                       | Government<br>Allocation kHz                                                   | Non-Government<br>Allocation kHz                                               | Rule part(s)                                                                                                 | Special-use frequencies |
| (1)                                                                                | (2)                                                                                | (3)                                           | (4)                                                                            | (5)                                                                            | (6)                                                                                                          | (7)                     |
| STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (2500<br>kHz).                            |                                                                                    |                                               |                                                                                |                                                                                |                                                                                                              |                         |
| 2501-2502                                                                          | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL<br>Space Research.                        |                                               |                                                                                |                                                                                |                                                                                                              |                         |
| 2502-2625<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).                | 2502-2505<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL                              |                                               | G108                                                                           |                                                                                |                                                                                                              |                         |
| 484 495 504                                                                        | 2505-2850<br>FIXED.<br>MOBILE.                                                     |                                               | 2505-2850<br>FIXED.<br>MOBILE.                                                 | 2505-2850<br>FIXED.<br>LAND MOBILE.<br>MARITIME MOBILE.                        | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                         |
| 2625-2650<br>MARITIME MOBILE.<br>MARITIME RADIO-<br>NAVIGATION.<br>484             |                                                                                    |                                               |                                                                                |                                                                                |                                                                                                              |                         |
| 2850-2850<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br>484 495     |                                                                                    |                                               | US285                                                                          | US285                                                                          |                                                                                                              |                         |
| 2850-3025                                                                          | AERONAUTICAL<br>MOBILE (R).<br>501 505                                             |                                               | 2850-3025<br>AERONAUTICAL<br>MOBILE (R).<br>501 505 US283                      | 2850-3025<br>AERONAUTICAL<br>MOBILE (R).<br>501 505 US283                      | AVIATION (87).                                                                                               |                         |
| 3025-3155                                                                          | AERONAUTICAL<br>MOBILE (OR).                                                       |                                               | 3025-3155<br>AERONAUTICAL<br>MOBILE (OR).                                      | 3025-3155<br>AERONAUTICAL<br>MOBILE (OR).                                      |                                                                                                              |                         |
| 3155-3200                                                                          | FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br><br>506 507              |                                               | 3155-3230<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).            | 3155-3230<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).            | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                         |
| 3200-3230                                                                          | FIXED<br>MOBILE except<br>aeronautical mobile<br>(R).<br>BROADCASTING 503.<br>506  |                                               |                                                                                |                                                                                |                                                                                                              |                         |
| 3230-3400                                                                          | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING 503<br><br>506 508 |                                               | 3230-3400<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation. | 3230-3400<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation. | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                         |
| 3400-3500                                                                          | AERONAUTICAL<br>MOBILE (R).                                                        |                                               | 3400-3500<br>AERONAUTICAL<br>MOBILE (R).<br>US283                              | 3400-3500<br>AERONAUTICAL<br>MOBILE (R).<br>US283                              | AVIATION (87).                                                                                               |                         |
| 3500-3800<br>AMATEUR 510<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>484 | 3500-3750<br>AMATEUR 510<br><br>509 511<br><br>3750-4000                           | 3500-3900<br>AMATEUR 510<br>FIXED.<br>MOBILE. | 3500-4000<br><br>510                                                           | 3500-4000<br>AMATEUR 510                                                       | AMATEUR (87).                                                                                                |                         |



| International table                                                                    |                                                                                              |                                                              | United States table                                                 |                                                                     | FCC use designators                                                                                          |                                  |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------|
| Region 1—allocation kHz                                                                | Region 2—allocation kHz                                                                      | Region 3—allocation kHz                                      | Government<br>Allocation kHz                                        | Non-Government<br>Allocation kHz                                    | Rule part(s)                                                                                                 | Special-use frequencies          |
| (1)                                                                                    | (2)                                                                                          | (3)                                                          | (4)                                                                 | (5)                                                                 | (6)                                                                                                          | (7)                              |
| 3800-3900<br>FIXED.<br>AERONAUTICAL<br>MOBILE (OR).<br>LAND MOBILE.                    | AMATEUR 510<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).<br><br>511 512 514 515 |                                                              |                                                                     |                                                                     |                                                                                                              |                                  |
| 3900-3950<br>AERONAUTICAL<br>MOBILE (OR).<br><br>513                                   |                                                                                              | 3900-3950<br>AERONAUTICAL<br>MOBILE.<br>BROADCASTING.        |                                                                     |                                                                     |                                                                                                              |                                  |
| 3950-4000<br>FIXED.<br>BROADCASTING.                                                   |                                                                                              | 3950-4000<br>FIXED.<br>BROADCASTING.<br>516                  |                                                                     |                                                                     |                                                                                                              |                                  |
| 4000-4063                                                                              | FIXED.<br>MARITIME MOBILE<br>517<br><br>516                                                  |                                                              | 4000-4438<br>MARITIME MOBILE<br>520                                 | 4000-4438<br>MARITIME MOBILE<br>520                                 | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                                                   |                                  |
| 4063-4438                                                                              | MARITIME MOBILE<br>520<br>518 519                                                            |                                                              | US82 US212 US236                                                    | US82 US212 US236                                                    |                                                                                                              |                                  |
| 4438-4650<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).                    |                                                                                              | 4650-4850<br>FIXED.<br>MOBILE except<br>aeronautical mobile. | 4438-4650<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 4438-4650<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                  |
| 4650-4700                                                                              | AERONAUTICAL<br>MOBILE (R).                                                                  |                                                              | 4650-4700<br>AERONAUTICAL<br>MOBILE (R).<br>US282 US283             | 4650-4700<br>AERONAUTICAL<br>MOBILE (R).<br>US282 US283             | AVIATION (87).                                                                                               |                                  |
| 4700-4750                                                                              | AERONAUTICAL<br>MOBILE (OR).                                                                 |                                                              | 4700-4750<br>AERONAUTICAL<br>MOBILE (OR).                           | 4700-4750<br>AERONAUTICAL<br>MOBILE (OR).                           |                                                                                                              |                                  |
| 4750-4850<br>FIXED.<br>AERONAUTICAL<br>MOBILE (OR).<br>LAND MOBILE<br>BROADCASTING 503 | 4750-4850<br>FIXED.<br>MOBILE except<br>aeronautical.<br>BROADCASTING 503                    | 4750-4850<br>FIXED.<br>BROADCASTING 503<br>Land Mobile.      | 4750-4850<br>FIXED.<br>MOBILE except<br>aeronautical mobile.        | 4750-4850<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                                 |                                  |
| 4850-4995                                                                              | FIXED.<br>LAND MOBILE.<br>BROADCASTING 503.                                                  |                                                              | 4850-4995<br>FIXED.<br>MOBILE.                                      | 4850-4995<br>FIXED.                                                 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                                 |                                  |
| 4995-5003                                                                              | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (5000<br>kHz).                                      |                                                              | 4995-5005<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.              | 4995-5005<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.              |                                                                                                              | 5000 kHz: Standard<br>frequency. |
| 5003-5005                                                                              | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL<br>Space Research.                                  |                                                              | G106                                                                |                                                                     |                                                                                                              |                                  |
| 5005-5060                                                                              | FIXED.<br>BROADCASTING 503                                                                   |                                                              | 5005-5060<br>FIXED.                                                 | 5005-5060<br>FIXED.                                                 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                  |
| 5060-5250                                                                              | FIXED.<br>Mobile except<br>aeronautical mobile.                                              |                                                              | 5060-5450<br>FIXED.<br>MOBILE except<br>aeronautical mobile.        | 5060-5450<br>FIXED.<br>MOBILE except<br>aeronautical mobile.        | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                                 |                                  |



| International table                                                 |                                                                     |                                                                     | United States table                                                 |                                                                     | FCC use designators                                                                                          |                                                                     |
|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Region 1—allocation kHz                                             | Region 2—allocation kHz                                             | Region 3—allocation kHz                                             | Government<br>Allocation kHz                                        | Non-Government<br>Allocation kHz                                    | Rule part(s)                                                                                                 | Special-use frequencies                                             |
| (1)                                                                 | (2)                                                                 | (3)                                                                 | (4)                                                                 | (5)                                                                 | (6)                                                                                                          | (7)                                                                 |
| 521                                                                 |                                                                     |                                                                     |                                                                     |                                                                     | PRIVATE LAND MOBILE (90).                                                                                    |                                                                     |
| 5250-5450                                                           | FIXED.<br>MOBILE except<br>aeronautical mobile.                     |                                                                     |                                                                     |                                                                     |                                                                                                              |                                                                     |
| 5450-5480<br>FIXED.<br>AERONAUTICAL<br>MOBILE (OR).<br>LAND MOBILE. | 5450-5480<br>AERONAUTICAL<br>MOBILE (R).                            | 5450-5480<br>FIXED.<br>AERONAUTICAL<br>MOBILE (OR).<br>LAND MOBILE. | 5450-5680<br>AERONAUTICAL<br>MOBILE (R).                            | 5450-5680<br>AERONAUTICAL<br>MOBILE (R).                            | AVIATION (87).                                                                                               |                                                                     |
| 5480-5680                                                           | AERONAUTICAL<br>MOBILE (R).<br>501 505                              |                                                                     | 501 505<br>US283                                                    | 501 505<br>US283                                                    |                                                                                                              |                                                                     |
| 5680-5730                                                           | AERONAUTICAL<br>MOBILE (OR).<br>501 505                             |                                                                     | 5680-5730<br>AERONAUTICAL<br>MOBILE (OR).<br>501 505                | 5680-5730<br>AERONAUTICAL<br>MOBILE (OR).<br>501 505                |                                                                                                              |                                                                     |
| 5730-5950<br>FIXED.<br>LAND MOBILE.                                 | 5730-5950<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 5730-5950<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 5730-5950<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 5730-5950<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                                 |                                                                     |
| 5950-6200                                                           | BROADCASTING.                                                       |                                                                     | 5950-6200<br>BROADCASTING.<br>US280                                 | 5950-6200<br>BROADCASTING.<br>US280                                 | RADIO BROADCAST<br>(HF) (73).                                                                                |                                                                     |
| 6200-6525                                                           | MARITIME MOBILE<br>523.<br>522                                      |                                                                     | 6200-6525<br>MARITIME MOBILE<br>523.<br>522<br>US82 US284           | 6200-6525<br>MARITIME MOBILE<br>523.<br>522<br>US82 US284           | MARITIME (81 & 83).                                                                                          |                                                                     |
| 6525-6685                                                           | AERONAUTICAL<br>MOBILE (R).                                         |                                                                     | 6525-6685<br>AERONAUTICAL<br>MOBILE (R).<br>US283                   | 6525-6685<br>AERONAUTICAL<br>MOBILE (R).<br>US283                   | AVIATION (87).                                                                                               |                                                                     |
| 6685-6765                                                           | AERONAUTICAL<br>MOBILE (OR).                                        |                                                                     | 6685-6765<br>AERONAUTICAL<br>MOBILE (OR).                           | 6685-6765<br>AERONAUTICAL<br>MOBILE (OR).                           |                                                                                                              |                                                                     |
| 6765-7000                                                           | FIXED.<br>Land Mobile 525<br>524                                    |                                                                     | 6765-7000<br>FIXED.<br>Mobile.<br>524                               | 6765-7000<br>FIXED.<br>Mobile<br>524                                | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                                                        | 6780 + 15 kHz: Industrial,<br>scientific, and medical<br>frequency. |
| 7000-7100                                                           | AMATEUR 510<br>AMATEUR-SATELLITE.<br>526 527                        |                                                                     | 7000-7300                                                           | 7000-7100<br>AMATEUR 510<br>AMATEUR-SATELLITE.                      | AMATEUR (97).                                                                                                |                                                                     |
| 7100-7300<br>BROADCASTING.                                          | 7100-7300<br>AMATEUR 510<br>528                                     | 7100-7300<br>BROADCASTING.                                          | 510 528                                                             | 7100-7300<br>AMATEUR 510<br>528                                     | AMATEUR (97).                                                                                                |                                                                     |
| 7300-8100                                                           | FIXED.<br>Land Mobile.<br>529                                       |                                                                     | 7300-8100<br>FIXED.<br>Mobile.                                      | 7300-8100<br>FIXED.<br>Mobile.                                      | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).<br>PRIVATE LAND MOBILE<br>(90). |                                                                     |
| 8100-8195                                                           | FIXED.<br>MARITIME MOBILE.                                          |                                                                     | 8100-8815<br>MARITIME MOBILE.                                       | 8100-8815<br>MARITIME mobile.                                       | MARITIME (81 & 83).                                                                                          |                                                                     |
| 8195-8815                                                           | MARITIME MOBILE.<br>501                                             |                                                                     | 501 US82<br>US236 US241                                             | 501 US82<br>US236 US241                                             |                                                                                                              |                                                                     |
| 8815-8965                                                           |                                                                     |                                                                     | 8815-8965                                                           | 8815-8965                                                           |                                                                                                              |                                                                     |



| International table     |                                                                     |                         | United States table                                                   |                                                                       | FCC use designators                                                          |                                   |
|-------------------------|---------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------|
| Region 1—allocation kHz | Region 2—allocation kHz                                             | Region 3—allocation kHz | Government<br>Allocation kHz                                          | Non-Government<br>Allocation kHz                                      | Rule part(s)                                                                 | Special-use frequencies           |
| (1)                     | (2)                                                                 | (3)                     | (4)                                                                   | (5)                                                                   | (6)                                                                          | (7)                               |
|                         | AERONAUTICAL<br>MOBILE (R).                                         |                         | AERONAUTICAL<br>MOBILE (R).                                           | AERONAUTICAL<br>MOBILE (R).                                           | Aviation (87).                                                               |                                   |
| 8965-9040               | AERONAUTICAL<br>MOBILE (OR).                                        |                         | 8965-9040<br>AERONAUTICAL<br>MOBILE (OR).                             | 8965-9040<br>AERONAUTICAL<br>MOBILE (OR).                             |                                                                              |                                   |
| 9040-9590               | FIXED.                                                              |                         | 9040-9500<br>FIXED.                                                   | 9040-9050<br>FIXED.                                                   | Aviation (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83). |                                   |
| 9500-9900               | BROADCASTING.                                                       |                         | 9500-9900<br>BROADCASTING.                                            | 9500-9900<br>BROADCASTING.                                            | RADIO BROADCAST<br>(HF) (73).<br>INTERNATIONAL FIXED<br>PUBLIC (23).         |                                   |
|                         | 530 531                                                             |                         | US235                                                                 | US235                                                                 |                                                                              |                                   |
| 9900-9995               | FIXED.                                                              |                         | 9900-9995<br>FIXED.                                                   | 9900-9995<br>FIXED.                                                   | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                        |                                   |
| 9995-10003              | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (10000<br>kHz).<br>501     |                         | 9995-10005<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.               | 9995-10005<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.               |                                                                              | 10000 kHz: Standard<br>frequency. |
| 10003-10005             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>Space Research.<br>501 |                         | 501 G106                                                              | 501                                                                   |                                                                              |                                   |
| 10005-10100             | AERONAUTICAL<br>MOBILE (R).<br>501                                  |                         | 10005-10100<br>AERONAUTICAL<br>MOBILE (R).<br>501 US283               | 10005-10100<br>AERONAUTICAL<br>MOBILE (R).<br>501 US283               | AVIATION (87).                                                               |                                   |
| 10100-10150             | FIXED.<br>Amateur 510.                                              |                         | 10100-10150<br>510 US247                                              | 10100-10150<br>AMATEUR 510.<br>US247                                  | AMATEUR (97).                                                                |                                   |
| 10150-11175             | FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R).              |                         | 10150-11175<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 10150-11175<br>FIXED.<br>MOBILE except<br>aeronautical mobile<br>(R). | 10150-11175<br>AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).         |                                   |
| 11175-11275             | AERONAUTICAL<br>MOBILE (OR).                                        |                         | 11175-11275<br>AERONAUTICAL<br>MOBILE (OR).                           | 11175-11275<br>AERONAUTICAL<br>MOBILE (OR).                           |                                                                              |                                   |
| 11275-11400             | AERONAUTICAL<br>MOBILE (R).                                         |                         | 11275-11400<br>AERONAUTICAL<br>MOBILE (R).<br>US283                   | 11275-11400<br>AERONAUTICAL<br>MOBILE (R).<br>US283                   | AVIATION (87).                                                               |                                   |
| 11400-11650             | FIXED.                                                              |                         | 11400-11650<br>FIXED.                                                 | 11400-11650<br>FIXED.                                                 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                        |                                   |
| 11650-12050             | BROADCASTING.                                                       |                         | 11650-12050<br>BROADCASTING.                                          | 11650-12050<br>BROADCASTING.                                          | RADIO BROADCAST<br>(HF) (73).<br>INTERNATIONAL FIXED<br>PUBLIC (23).         |                                   |
|                         | 530 531                                                             |                         | US235                                                                 | US235                                                                 |                                                                              |                                   |
| 12050-12230             | FIXED.                                                              |                         | 12050-12230<br>FIXED.                                                 | 12050-12230<br>FIXED.                                                 | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                        |                                   |
| 12230-13200             | MARITIME MOBILE.                                                    |                         | 12230-13200<br>MARITIME MOBILE.                                       | 12230-13200<br>MARITIME MOBILE.                                       | INTERNATIONAL FIXED<br>PUBLIC (23).                                          |                                   |



| International table     |                                                                 |                         | United States table                                                          |                                                          | FCC use designators                                                  |                                                                         |
|-------------------------|-----------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------|
| Region 1—allocation kHz | Region 2—allocation kHz                                         | Region 3—allocation kHz | Government<br>Allocation kHz                                                 | Non-Government<br>Allocation kHz                         | Rule part(s)                                                         | Special-use frequencies                                                 |
| (1)                     | (2)                                                             | (3)                     | (4)                                                                          | (5)                                                      | (6)                                                                  | (7)                                                                     |
|                         | 532                                                             |                         | US82 US235                                                                   | US82 US235                                               | MARITIME (81 & 83).                                                  |                                                                         |
| 13200-13260             | AERONAUTICAL<br>MOBILE (OR).                                    |                         | 13200-13260<br>AERONAUTICAL<br>MOBILE (OR).                                  | 13200-13260<br>AERONAUTICAL<br>MOBILE (OR).              |                                                                      |                                                                         |
| 13260-13360             | AERONAUTICAL<br>MOBILE (R).                                     |                         | 13260-13360<br>AERONAUTICAL<br>MOBILE (R).<br>US283                          | 13260-13360<br>AERONAUTICAL<br>MOBILE (R).<br>US283      | AVIATION (87).                                                       |                                                                         |
| 13360-13410             | FIXED.<br>RADIO ASTRONOMY.<br>533                               |                         | 13360-13410<br>RADIO ASTRONOMY.<br>533 G115                                  | 13360-13410<br>RADIO ASTRONOMY.<br>533                   |                                                                      |                                                                         |
| 13410-13600             | FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).<br>534   |                         | 13410-13600<br>FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).<br>534 | 13410-13600<br>FIXED.<br>534                             | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                | 13560 $\pm$ 7 kHz:<br>Industrial, scientific,<br>and medical frequency. |
| 13600-13800             | BROADCASTING.<br><br>531                                        |                         | 13600-13800<br>BROADCASTING.<br><br>US235                                    | 13600-13800<br>BROADCASTING.<br><br>US235                | RADIO BROADCAST<br>(HF) (73).<br>INTERNATIONAL FIXED<br>PUBLIC (23). |                                                                         |
| 13800-14000             | FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).          |                         | 13800-14000<br>FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).        | 13800-14000<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                                                         |
| 14000-14250             | AMATEUR 510<br>AMATEUR-SATELLITE.                               |                         | 14000-14350                                                                  | 14000-14250<br>AMATEUR 510<br>AMATEUR-SATELLITE.         | AMATEUR (97).                                                        |                                                                         |
| 14250-14350             | AMATEUR 510<br>535                                              |                         | 510                                                                          | 14250-14350<br>AMATEUR 510                               | AMATEUR (97).                                                        |                                                                         |
| 14350-14990             | FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).          |                         | 14350-14990<br>FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).        | 14350-14990<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                                                         |
| 14990-15005             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (15000<br>kHz).<br>501 |                         | 14990-15010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.                     | 14990-15010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL. |                                                                      | 15000 kHz: Standard<br>frequency.                                       |
| 15005-15010             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>Space Research.    |                         | 501 G106                                                                     | 501                                                      |                                                                      |                                                                         |
| 15010-15100             | AERONAUTICAL<br>MOBILE (OR).                                    |                         | 15010-15100<br>AERONAUTICAL<br>MOBILE (OR).                                  | 15010-15100<br>AERONAUTICAL<br>MOBILE (OR).              |                                                                      |                                                                         |
| 15100-15600             | BROADCASTING.<br><br>531                                        |                         | 15100-15600<br>BROADCASTING.<br><br>US235                                    | 15100-15600<br>BROADCASTING.<br><br>US235                | RADIO BROADCAST<br>(HF) (73).<br>INTERNATIONAL FIXED<br>PUBLIC (23). |                                                                         |
| 15600-16360             | FIXED.<br><br>536                                               |                         | 15600-16360<br>FIXED.                                                        | 15600-16360<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                                                         |
| 16360-17410             | MARITIME MOBILE.<br>532                                         |                         | 16360-17410<br>MARITIME MOBILE.<br>US82 US235                                | 16360-17410<br>MARITIME MOBILE.<br>US82 US235            | MARITIME (81 & 83).                                                  |                                                                         |



| International table     |                                                                     |                         | United States table                                      |                                                          | FCC use designators                                                         |                                   |
|-------------------------|---------------------------------------------------------------------|-------------------------|----------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------|
| Region 1—allocation kHz | Region 2—allocation kHz                                             | Region 3—allocation kHz | Government<br>Allocation kHz                             | Non-Government<br>Allocation kHz                         | Rule part(s)                                                                | Special-use frequencies           |
| (1)                     | (2)                                                                 | (3)                     | (4)                                                      | (5)                                                      | (6)                                                                         | (7)                               |
| 17410-17550             | FIXED.                                                              |                         | 17410-17550<br>FIXED.                                    | 17410-17550<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                       |                                   |
| 17550-17900             | BROADCASTING.                                                       |                         | 17550-17900<br>BROADCASTING.                             | 17550-17900<br>BROADCASTING.                             | RADIO BROADCAST<br>(HF) (73).<br>INTERNATIONAL FIXED<br>PUBLIC (23).        |                                   |
|                         | 531                                                                 |                         | US235                                                    | US235                                                    |                                                                             |                                   |
| 17900-17970             | AERONAUTICAL<br>MOBILE (R).                                         |                         | 17900-17970<br>AERONAUTICAL<br>MOBILE (R).<br>US283      | 17900-17970<br>AERONAUTICAL<br>MOBILE (R).<br>US283      | AVIATION (87).                                                              |                                   |
| 17970-18030             | AERONAUTICAL<br>MOBILE (OR).                                        |                         | 17970-18030<br>AERONAUTICAL<br>MOBILE (OR).              | 17970-18030<br>AERONAUTICAL<br>MOBILE (OR).              |                                                                             |                                   |
| 18030-18052             | FIXED.                                                              |                         | 18030-18068<br>FIXED.                                    | 18030-18068<br>FIXED.                                    | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                  |                                   |
| 18052-18068             | FIXED.<br>Space Research.                                           |                         |                                                          |                                                          |                                                                             |                                   |
| 18068-18168             | AMATEUR 510<br>AMATEUR-SATELLITE.                                   |                         | 18068-18168                                              | 18068-18168<br>AMATEUR 510<br>AMATEUR-SATELLITE.         | AMATEUR (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83). |                                   |
|                         | 537 538                                                             |                         | 510 US248                                                | US248                                                    |                                                                             |                                   |
| 18168-18780             | FIXED.                                                              |                         | 18168-18780<br>FIXED.                                    | 18168-18780<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                       |                                   |
| 18780-18900             | MARITIME MOBILE.                                                    |                         | 18780-18900<br>MARITIME MOBILE.                          | 18780-18900<br>MARITIME MOBILE.                          | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).                  |                                   |
|                         | 532                                                                 |                         | US235                                                    | US235                                                    |                                                                             |                                   |
| 18900-19680             | FIXED.                                                              |                         | 18900-19680<br>FIXED.                                    | 18900-19680<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                       |                                   |
| 19680-19800             | MARITIME MOBILE.<br>532                                             |                         | 19680-19800<br>MARITIME MOBILE.<br>US235                 | 19680-19800<br>MARITIME MOBILE.<br>US235                 | MARITIME (81 & 83).                                                         |                                   |
| 19800-19990             | FIXED.                                                              |                         | 19800-19990<br>FIXED.                                    | 19800-19990<br>FIXED.                                    | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                       |                                   |
| 19990-19995             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>Space Research.<br>501 |                         | 19990-20010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL. | 19990-20010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL. |                                                                             | 20000 kHz: Standard<br>frequency. |
| 19995-20010             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (20000<br>kHz).<br>501     |                         | 501 G106                                                 | 501                                                      |                                                                             |                                   |
| 20010-21000             | FIXED.<br>Mobile.                                                   |                         | 20010-21000<br>FIXED.<br>Mobile.                         | 20010-21000<br>FIXED.                                    |                                                                             |                                   |
| 21000-21450             | AMATEUR 510<br>AMATEUR-SATELLITE.                                   |                         | 21000-21450<br>510                                       | 21000-21450<br>AMATEUR 510<br>AMATEUR-SATELLITE.         | AMATEUR (87).                                                               |                                   |



| International table     |                                                               |                         | United States table                                                   |                                                             | FCC use designators                                                  |                                   |
|-------------------------|---------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------|
| Region 1—allocation kHz | Region 2—allocation kHz                                       | Region 3—allocation kHz | Government<br>Allocation kHz                                          | Non-Government<br>Allocation kHz                            | Rule part(s)                                                         | Special-use frequencies           |
| (1)                     | (2)                                                           | (3)                     | (4)                                                                   | (5)                                                         | (6)                                                                  | (7)                               |
| 21450-21850             | BROADCASTING.<br><br>531                                      |                         | 21450-21850<br>BROADCASTING.<br><br>US235                             | 21450-21850<br>BROADCASTING.<br><br>US235                   | INTERNATIONAL FIXED<br>PUBLIC (23).<br>RADIO BROADCAST<br>(HF) (73). |                                   |
| 21850-21870             | FIXED.<br><br>539                                             |                         | 21850-21924<br>FIXED.                                                 | 21850-21924<br>FIXED.                                       | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                   |
| 21870-21924             | AERONAUTICAL FIXED.                                           |                         | US293                                                                 | US293                                                       |                                                                      |                                   |
| 21924-22000             | AERONAUTICAL<br>MOBILE (R).                                   |                         | 21924-22000<br>AERONAUTICAL<br>MOBILE (R).                            | 21924-22000<br>AERONAUTICAL<br>MOBILE (R).                  | AVIATION (87).                                                       |                                   |
| 22000-22855             | MARITIME MOBILE.<br><br>532 540                               |                         | 22000-22855<br>MARITIME MOBILE.<br><br>US235 US82                     | 22000-22855<br>MARITIME MOBILE.<br><br>US235 US82           | INTERNATIONAL FIXED<br>PUBLIC (23).<br>MARITIME (81 & 83).           |                                   |
| 22855-23000             | FIXED.<br><br>540                                             |                         | 22855-23000<br>FIXED.                                                 | 22855-23000<br>FIXED.                                       | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                   |
| 23000-23200             | FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).<br>540 |                         | 23000-23200<br>FIXED.<br>Mobile except<br>aeronautical mobile<br>(R). | 23000-23200<br>FIXED.                                       | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                   |
| 23200-23350             | AERONAUTICAL FIXED.<br>AERONAUTICAL<br>MOBILE (OR).           |                         | 23200-23350<br>AERONAUTICAL<br>MOBILE (OR).                           | 23200-23350<br>AERONAUTICAL<br>MOBILE (OR).                 |                                                                      |                                   |
| 23350-24000             | FIXED.<br>MOBILE except<br>aeronautical mobile<br>541<br>542  |                         | 23350-24890<br>FIXED.<br>MOBILE except<br>aeronautical mobile.        | 23350-24890<br>FIXED.                                       | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).                |                                   |
| 24000-24890             | FIXED.<br>LAND MOBILE.<br>542                                 |                         |                                                                       |                                                             |                                                                      |                                   |
| 24890-24990             | AMATEUR 510<br>AMATEUR-SATELLITE.<br>542 543                  |                         | 24890-24990<br><br>510 US248                                          | 24890-24990<br>AMATEUR 510<br>AMATEUR-SATELLITE.<br>US248   | AMATEUR (87).                                                        |                                   |
| 24990-25005             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL (25000<br>kHz).      |                         | 24990-25010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.              | 24990-25010<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.    |                                                                      | 25000 kHz: Standard<br>frequency. |
| 25005-25010             | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL.<br>Space Research.  |                         | G106                                                                  |                                                             |                                                                      |                                   |
| 25010-25070             | FIXED.<br>MOBILE except<br>aeronautical mobile.               |                         | 25010-25070                                                           | 25010-25070<br>LAND MOBILE.<br><br>NG112                    | PRIVATE LAND MOBILE<br>(90).                                         |                                   |
| 25070-25210             | MARITIME MOBILE.<br><br>544                                   |                         | 25070-25210<br>MARITIME MOBILE.<br><br>US235 US281                    | 25070-25210<br>MARITIME MOBILE.<br><br>US235 US281<br>NG112 | MARITIME (81 and 83).<br>PRIVATE LAND MOBILE<br>(90).                |                                   |



| International table     |                                                 |                         | United States table                                                    |                                                                       | FCC use designators                                              |                                                                     |
|-------------------------|-------------------------------------------------|-------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------|
| Region 1—allocation kHz | Region 2—allocation kHz                         | Region 3—allocation kHz | Government<br>Allocation kHz                                           | Non-Government<br>Allocation kHz                                      | Rule part(s)                                                     | Special-use frequencies                                             |
| (1)                     | (2)                                             | (3)                     | (4)                                                                    | (5)                                                                   | (6)                                                              | (7)                                                                 |
| 25210-25550             | FIXED.<br>MOBILE except<br>aeronautical mobile. |                         | 25210-25330                                                            | 25210-25330<br>LAND MOBILE.                                           | PRIVATE LAND MOBILE<br>(90).                                     |                                                                     |
|                         |                                                 |                         | 25330-25550<br>FIXED.<br>MOBILE except<br>aeronautical mobile.         | 25330-25550                                                           |                                                                  |                                                                     |
| 25550-25670             | RADIO ASTRONOMY.<br>545                         |                         | 25550-25670<br>RADIO ASTRONOMY.<br>545 US74 US249                      | 25550-25670<br>RADIO ASTRONOMY.<br>545 US74 US249                     |                                                                  |                                                                     |
| 25670-26100             | BROADCASTING.                                   |                         | 25670-26100<br>BROADCASTING.<br><br>US25                               | 25670-26100<br>BROADCASTING.<br><br>US25                              | AUXILIARY<br>BROADCASTING (74).<br>RADIO BROADCAST<br>(HF) (73). |                                                                     |
| 26100-26175             | MARITIME MOBILE.<br><br>544                     |                         | 26100-26175<br>MARITIME MOBILE.<br><br>US235                           | 26100-26175<br>MARITIME MOBILE.<br><br>US235                          | AUXILIARY<br>BROADCASTING (74).<br>MARITIME (81 and 83).         |                                                                     |
| 26175-27500             | FIXED.<br>MOBILE except<br>aeronautical mobile. |                         | 26175-26480                                                            | 26175-26480<br>LAND MOBILE.                                           | AUXILIARY<br>BROADCASTING (74).                                  |                                                                     |
|                         |                                                 |                         | 26480-26950<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>US10 | 26480-26950<br><br>US10                                               |                                                                  |                                                                     |
|                         |                                                 |                         | 26950-27540                                                            | 26950-26960<br>FIXED.<br>546                                          | INTERNATIONAL FIXED<br>PUBLIC (23).                              |                                                                     |
|                         |                                                 |                         |                                                                        | 26960-27230<br>MOBILE except<br>aeronautical mobile.<br>546           | PERSONAL (95).                                                   | 27120±160 kHz:<br>Industrial, scientific,<br>and medical frequency. |
|                         |                                                 |                         |                                                                        | 27230-27410<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>546 | PERSONAL (95).<br>PRIVATE LAND MOBILE<br>(90).                   |                                                                     |
|                         | 546                                             |                         |                                                                        | 27410-27540<br>LAND MOBILE.                                           | PRIVATE LAND MOBILE<br>(90).                                     |                                                                     |
| 27500-28000             | METEOROLOGICAL<br>AIDS.<br>FIXED.<br>MOBILE.    |                         | 546                                                                    |                                                                       |                                                                  |                                                                     |
|                         |                                                 |                         | 27540-28000<br>FIXED.<br>MOBILE.                                       | 27540-28000                                                           |                                                                  |                                                                     |

## § 2.106 Table of Frequency Allocations.

| International table     |                                |                         | United States table          |                                             | FCC use designators |                         |
|-------------------------|--------------------------------|-------------------------|------------------------------|---------------------------------------------|---------------------|-------------------------|
| Region 1—allocation MHz | Region 2—allocation MHz        | Region 3—allocation MHz | Government<br>Allocation MHz | Non-Government<br>Allocation MHz            | Rule part(s)        | Special-use frequencies |
|                         | (2)                            | (3)                     | (4)                          | (5)                                         | (6)                 | (7)                     |
| 28.0-29.7               | AMATEUR.<br>AMATEUR-SATELLITE. |                         | 28.0-29.7                    | 28.0-29.7<br>AMATEUR.<br>AMATEUR-SATELLITE. | AMATEUR (97).       |                         |
| 29.7-30.005             |                                |                         | 29.7-29.89                   | 29.7-29.8                                   |                     |                         |



| International table     |                                                                                         |                         | United States table                                 |                                                                    | FCC use designators                                               |                         |
|-------------------------|-----------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------|
| Region 1—allocation MHz | Region 2—allocation MHz                                                                 | Region 3—allocation MHz | Government<br>Allocation MHz                        | Non-Government<br>Allocation MHz                                   | Rule part(s)                                                      | Special-use frequencies |
| (1)                     | (2)                                                                                     | (3)                     | (4)                                                 | (5)                                                                | (6)                                                               | (7)                     |
|                         | FIXED.<br>MOBILE.                                                                       |                         |                                                     | LAND MOBILE.                                                       | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         |                                                     | 29.8–29.89<br>FIXED.                                               | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).             |                         |
|                         |                                                                                         |                         | 29.89–29.91<br>FIXED.<br>MOBILE.                    | 29.89–29.91                                                        |                                                                   |                         |
|                         |                                                                                         |                         | 29.91–30.0                                          | 29.91–30.0<br>FIXED.                                               | AVIATION (87).<br>INTERNATIONAL FIXED<br>PUBLIC (23).             |                         |
|                         |                                                                                         |                         | 30.0–30.56                                          | 30.0–30.56                                                         |                                                                   |                         |
| 30.005–30.01            | FIXED.<br>MOBILE.<br>SPACE RESEARCH.<br>SPACE OPERATIONS<br>(satellite identification). |                         | MOBILE.<br>Fixed.                                   |                                                                    |                                                                   |                         |
| 30.01–37.5              |                                                                                         |                         |                                                     |                                                                    |                                                                   |                         |
|                         | FIXED.<br>MOBILE.                                                                       |                         | 30.56–32.0                                          | 30.56–32.0<br>LAND MOBILE.<br>NG124                                | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         | 32.0–33.0<br>FIXED.<br>MOBILE.                      | 32.0–33.0                                                          |                                                                   |                         |
|                         |                                                                                         |                         | 33.0–34.0                                           | 33.0–34.0<br>LAND MOBILE.<br>NG124                                 | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         | 34.0–35.0<br>FIXED.<br>MOBILE.                      | 34.0–35.0                                                          |                                                                   |                         |
|                         |                                                                                         |                         | 35.0–36.0                                           | 35.0–35.19<br>LAND MOBILE.<br>NG124                                | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         |                                                     | 35.19–35.69<br>LAND MOBILE.<br>NG124                               | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE (90). |                         |
|                         |                                                                                         |                         |                                                     | 35.69–36.0<br>LAND MOBILE.<br>NG124                                | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         | 36.0–37.0<br>FIXED.<br>MOBILE.<br>US220             | 36.0–37.0<br>US220                                                 |                                                                   |                         |
|                         |                                                                                         |                         | 37.0–37.5                                           | 37.0–37.5<br>LAND MOBILE.<br>NG124                                 | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         |                                                     |                                                                    |                                                                   |                         |
| 37.5–38.25              | FIXED.<br>MOBILE.<br>Radio Astronomy.                                                   |                         | 37.5–38.0<br>Radio Astronomy.<br>547                | 37.5–38.0<br>LAND MOBILE.<br>Radio Astronomy.<br>547<br>NG59 NG124 | PRIVATE LAND MOBILE (90).                                         |                         |
|                         |                                                                                         |                         | 38.0–38.25<br>FIXED.<br>MOBILE.<br>RADIO ASTRONOMY. | 38.0–38.25<br>RADIO ASTRONOMY.                                     |                                                                   |                         |



| International table                                          |                                                            |                                                 | United States table             |                                               | FCC use designators                                                  |                                                                              |
|--------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------|---------------------------------|-----------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------|
| Region 1—allocation<br>MHz                                   | Region 2—allocation<br>MHz                                 | Region 3—allocation<br>MHz                      | Government<br>Allocation MHz    | Non-Government<br>Allocation MHz              | Rule part(s)                                                         | Special-use frequencies                                                      |
| (1)                                                          | (2)                                                        | (3)                                             | (4)                             | (5)                                           | (6)                                                                  | (7)                                                                          |
|                                                              | 547                                                        |                                                 | 547 US81                        | 547 US81                                      |                                                                      |                                                                              |
| 38.25-39.986                                                 | FIXED.<br>MOBILE.                                          |                                                 | 38.25-39.0<br>FIXED.<br>MOBILE. | 38.25-39.0                                    |                                                                      |                                                                              |
| 39.986-40.02                                                 | FIXED.<br>MOBILE.<br>Space Research.                       |                                                 | 39.0-40.0                       | 39.0-40.0<br>LAND MOBILE.<br><br>NG124        | PRIVATE LAND MOBILE<br>(90).                                         |                                                                              |
| 40.02-40.98                                                  | FIXED.<br>MOBILE.<br>548                                   |                                                 | 40.0-42.0<br>FIXED.<br>MOBILE.  | 40.0-42.0                                     |                                                                      | 40.68 MHz $\pm$ .02 MHz:<br>Industrial, scientific<br>and medical frequency. |
| 40.98-41.015                                                 | FIXED.<br>MOBILE.<br>Space Research.<br>549 550 551        |                                                 |                                 |                                               |                                                                      |                                                                              |
| 41.015-44.0                                                  | FIXED.<br>MOBILE.<br><br>549 550 551                       |                                                 | 548<br>US210 US220              | 548<br>US210 US220                            |                                                                      |                                                                              |
|                                                              |                                                            |                                                 | 42.0-46.6                       | 42.0-43.19<br>LAND MOBILE.<br><br>NG124 NG141 | PRIVATE LAND MOBILE<br>(90).                                         |                                                                              |
|                                                              |                                                            |                                                 |                                 | 43.19-43.69<br>LAND MOBILE.<br><br>NG124      | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE<br>(90). |                                                                              |
| 44.0-47.0                                                    | FIXED.<br>MOBILE.<br><br>551 552                           |                                                 |                                 | 43.69-46.6<br>LAND MOBILE.<br><br>NG124 NG141 | PRIVATE LAND MOBILE<br>(90).                                         |                                                                              |
|                                                              |                                                            |                                                 | 46.6-47.0<br>FIXED.<br>MOBILE.  | 46.6-47.0                                     |                                                                      |                                                                              |
| 47.0-68.0<br>BROADCASTING.                                   | 47.0-50.0<br>FIXED.<br>MOBILE.                             | 47.0-50.0<br>FIXED.<br>MOBILE.<br>BROADCASTING. | 47.0-49.6                       | 47.0-49.6<br>LAND MOBILE.<br><br>NG124        | PRIVATE LAND MOBILE<br>(90).                                         |                                                                              |
|                                                              |                                                            |                                                 | 49.6-50.0<br>FIXED.<br>MOBILE.  | 49.6-50.0                                     |                                                                      |                                                                              |
| 553 554 555 559<br>561                                       | 50.0-54.0<br><br>AMATEUR.<br>556 557 558 560               |                                                 | 50.0-54.0                       | 50.0-54.0<br><br>AMATEUR.                     | AMATEUR (97).                                                        |                                                                              |
|                                                              | 54.0-68.0<br>BROADCASTING.<br>Fixed.<br>Mobile.<br><br>562 | 54.0-68.0<br>FIXED.<br>MOBILE.<br>BROADCASTING. | 54.0-72.0                       | 54.0-72.0<br>BROADCASTING.                    | RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74).     |                                                                              |
| 68.0-74.8<br>FIXED.<br>MOBILE except<br>aeronautical mobile. | 68.0-72.0<br>BROADCASTING.<br>Fixed.<br>Mobile.<br>563     | 68.0-74.8<br>FIXED.<br>MOBILE.                  |                                 |                                               |                                                                      |                                                                              |



| International table                                          |                                                               |                                                       | United States table                                                             |                                                                                 | FCC use designators                                                                    |                                                        |
|--------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------|
| Region 1—allocation MHz                                      | Region 2—allocation MHz                                       | Region 3—allocation MHz                               | Government Allocation MHz                                                       | Non-Government Allocation MHz                                                   | Rule part(s)                                                                           | Special-use frequencies                                |
| (1)                                                          | (2)                                                           | (3)                                                   | (4)                                                                             | (5)                                                                             | (6)                                                                                    | (7)                                                    |
| 564 565 567 568<br>571 572                                   | 72.0-73.0<br>FIXED.<br>MOBILE.                                | 566 568 571 572                                       | 72.0-73.0                                                                       | 72.0-73.0<br>FIXED.<br>MOBILE.<br><br>NG3 NG49 NG56                             | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PERSONAL (95).<br>PRIVATE LAND MOBILE<br>(90). |                                                        |
|                                                              | 73.0-74.6<br>RADIO ASTRONOMY.<br>569 570                      |                                                       | 73.0-74.6<br>RADIO ASTRONOMY.<br>569 US74                                       | 73.0-74.6<br>RADIO ASTRONOMY.<br>569 US74 NG133                                 |                                                                                        |                                                        |
|                                                              | 74.6-74.8<br>FIXED.<br>MOBILE.<br>572                         |                                                       | 74.6-74.8<br>FIXED.<br>MOBILE.<br>572 US273                                     | 74.6-74.8<br>FIXED.<br>MOBILE.<br>572 US273                                     |                                                                                        |                                                        |
| 74.8-75.2                                                    | AERONAUTICAL<br>RADIONAVIGATION.<br>572                       |                                                       | 74.8-75.2<br>AERONAUTICAL<br>RADIONAVIGATION.<br>572                            | 74.8-75.2<br>AERONAUTICAL<br>RADIONAVIGATION.<br>572                            | AVIATION (87).                                                                         | 75 MHz Marker Beacon.                                  |
| 75.2-87.5<br>FIXED.<br>MOBILE except<br>aeronautical mobile. | 75.2-75.4<br>FIXED.<br>MOBILE.<br>571 572                     | 75.4-87.0<br>FIXED.<br>MOBILE.<br><br>573 574 577 579 | 75.2-75.4<br>FIXED.<br>MOBILE.<br>572 US273                                     | 75.2-75.4<br>FIXED.<br>MOBILE.<br>572 US273                                     | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PERSONAL (95).<br>PRIVATE LAND MOBILE<br>(90). |                                                        |
|                                                              | 75.4-76.0<br>FIXED.<br>MOBILE.                                |                                                       | 75.4-76.0                                                                       | 75.4-76.0<br>FIXED.<br>MOBILE.<br><br>NG3 NG49 NG56                             |                                                                                        |                                                        |
|                                                              | 76.0-88.0<br>BROADCASTING.<br>Fixed.<br>Mobile.               |                                                       | 76.0-88.0                                                                       | 76.0-88.0<br>BROADCASTING.<br><br><br>NG129                                     |                                                                                        |                                                        |
| 87.5-100.0                                                   | 576                                                           | 87.0-100.0<br>FIXED.<br>MOBILE.<br>BROADCASTING.      | 88-108                                                                          | 88-108<br>BROADCASTING.                                                         | RADIO BROADCAST<br>(FM) (73).<br>Auxiliary Broadcasting<br>(74).                       |                                                        |
| BROADCASTING.                                                | 88-100<br>BROADCASTING.                                       |                                                       |                                                                                 |                                                                                 |                                                                                        |                                                        |
| 581 582                                                      |                                                               | 580                                                   |                                                                                 |                                                                                 |                                                                                        |                                                        |
| 100-108                                                      | BROADCASTING.<br>582 583 584 585<br>586 587 588 589<br>590    |                                                       | US93                                                                            | US93 NG2<br>NG128 NG129                                                         |                                                                                        |                                                        |
| 108.0-117.975                                                | AERONAUTICAL<br>RADIONAVIGATION.                              |                                                       | 108.0-117.975<br>AERONAUTICAL<br>RADIONAVIGATION.<br>US93                       | 108.0-117.975<br>AERONAUTICAL<br>RADIONAVIGATION.<br>US93                       |                                                                                        |                                                        |
| 117.975-136.0                                                | AERONAUTICAL<br>MOBILE (R).<br><br><br>501 591 592 593<br>594 |                                                       | 117.975-121.9375<br>AERONAUTICAL<br>MOBILE (R).<br>501 591 592 593<br>US26 US28 | 117.975-121.9375<br>AERONAUTICAL<br>MOBILE (R).<br>501 591 592 593<br>US26 US28 | AVIATION (87).                                                                         |                                                        |
|                                                              |                                                               |                                                       | 121.9375-123.0875                                                               | 121.9375-123.0875<br>AERONAUTICAL<br>MOBILE                                     | AVIATION (87).                                                                         |                                                        |
|                                                              |                                                               |                                                       | 591<br>US30 US31 US33<br>US80 US102 US213                                       | 591<br>US30 US31 US33<br>US80 US102 US213                                       |                                                                                        |                                                        |
|                                                              |                                                               |                                                       | 123.0875-123.5875<br>AERONAUTICAL<br>MOBILE                                     | 123.0875-123.5875<br>AERONAUTICAL<br>MOBILE                                     | AVIATION (87).                                                                         | 123.1 MHz for SAR<br>Scene-of-Action<br>Communication. |



| International table                                                                                    |                                                                                                                                                                                                                |                                                                                          | United States table                                                                                                                              |                                                                                                                                                  | FCC use designators                                    |                         |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                                             | Region 2—allocation<br>MHz                                                                                                                                                                                     | Region 3—allocation<br>MHz                                                               | Government<br>Allocation MHz                                                                                                                     | Non-Government<br>Allocation MHz                                                                                                                 | Rule part(s)                                           | Special-use frequencies |
| (1)                                                                                                    | (2)                                                                                                                                                                                                            | (3)                                                                                      | (4)                                                                                                                                              | (5)                                                                                                                                              | (6)                                                    | (7)                     |
|                                                                                                        |                                                                                                                                                                                                                |                                                                                          | 591 593<br>US32 US33 US112                                                                                                                       | 591 593<br>US32 US33 US112                                                                                                                       |                                                        |                         |
|                                                                                                        |                                                                                                                                                                                                                |                                                                                          | 123.5875-128.8125<br>AERONAUTICAL<br>MOBILE (R).<br>591 US26                                                                                     | 123.5875-128.8125<br>AERONAUTICAL<br>MOBILE (R).<br>591 US26                                                                                     | AVIATION (87).                                         |                         |
|                                                                                                        |                                                                                                                                                                                                                |                                                                                          | 128.8125-132.0125<br>591                                                                                                                         | 128.8125-132.0125<br>AERONAUTICAL<br>MOBILE (R).<br>591                                                                                          | AVIATION (87).                                         |                         |
|                                                                                                        |                                                                                                                                                                                                                |                                                                                          | 132.0125-136.0<br>AERONAUTICAL<br>MOBILE (R).<br>591<br>US26                                                                                     | 132.0125-136.0<br>AERONAUTICAL<br>MOBILE (R).<br>591<br>US26                                                                                     | AVIATION (87).                                         |                         |
| 136.0-137.0                                                                                            | AERONAUTICAL<br>MOBILE (R).<br>FIXED.<br>Mobile except<br>aeronautical mobile<br>(R).<br>591 595                                                                                                               |                                                                                          | 136.0-137.0<br><br>591 US244                                                                                                                     | 136.0-137.0<br>AERONAUTICAL<br>MOBILE (R).<br><br>591 US244                                                                                      | AVIATION (87).<br>SATELLITE<br>COMMUNICATIONS<br>(25). |                         |
| 137.0-138.0                                                                                            | SPACE OPERATION<br>(space-to-Earth).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>SPACE RESEARCH<br>(space-to-Earth).<br>Fixed.<br>Mobile except<br>aeronautical mobile<br>(R).<br>596 597 598 599 |                                                                                          | 137.0-138.0<br>SPACE OPERATION<br>(space-to-Earth).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>SPACE RESEARCH<br>(space-to-Earth). | 137.0-138.0<br>SPACE OPERATION<br>(space-to-Earth).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>SPACE RESEARCH<br>(space-to-Earth). | SATELLITE<br>COMMUNICATIONS<br>(25).                   |                         |
| 138.0-143.6<br>AERONAUTICAL<br>MOBILE (OR).<br><br>600 601 602 604                                     | 138.0-143.6<br>FIXED.<br>MOBILE.<br>/RADIOLOCATION/.<br>Space Research (space-<br>to-Earth).<br><br>599 603                                                                                                    | 138.0-143.6<br>FIXED.<br>MOBILE.<br>Space Research (space-<br>to-Earth).<br><br>599 603  | 138.0-144.0<br>FIXED.<br>MOBILE.                                                                                                                 | 138.0-144.0                                                                                                                                      |                                                        |                         |
| 143.6-143.65<br>AERONAUTICAL<br>MOBILE (OR).<br>SPACE RESEARCH<br>(space-to-Earth).<br><br>601 602 604 | 143.6-143.65<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(space-to-Earth).<br>/RADIOLOCATION/.<br><br>599 603                                                                                                    | 143.6-143.65<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(space-to-Earth).<br><br>599 603  |                                                                                                                                                  |                                                                                                                                                  |                                                        |                         |
| 143.65-144.0<br>AERONAUTICAL<br>MOBILE (OR).<br><br>600 601 602 604                                    | 143.65-144.0<br>FIXED.<br>MOBILE.<br>/RADIOLOCATION/.<br>Space Research (space-<br>to-Earth).<br><br>599 603                                                                                                   | 143.65-144.0<br>FIXED.<br>MOBILE.<br>Space Research (space-<br>to-Earth).<br><br>599 603 | US10 G30                                                                                                                                         | US10                                                                                                                                             |                                                        |                         |
| 144.0-146.0                                                                                            | AMATEUR 510<br>AMATEUR-SATELLITE.<br>605 606                                                                                                                                                                   |                                                                                          | 144.0-146.0<br><br>510                                                                                                                           | 144.0-146.0<br>AMATEUR 510<br>AMATEUR-SATELLITE.                                                                                                 | AMATEUR (97).                                          |                         |
| 146.0-149.9<br>FIXED.<br>MOBILE except<br>aeronautical Mobile<br>(R).<br><br>608                       | 146.0-148.0<br>AMATEUR.<br><br>607                                                                                                                                                                             | 146.0-148.0<br>AMATEUR.<br>FIXED.<br>MOBILE.<br><br>607                                  | 146.0-148.0                                                                                                                                      | 146.0-148.0<br>AMATEUR.                                                                                                                          | AMATEUR (97).                                          |                         |
|                                                                                                        | 146.0-149.9<br>FIXED.<br>MOBILE.<br><br>608                                                                                                                                                                    |                                                                                          | 148.0-149.9<br>FIXED.<br>MOBILE.<br><br>608 US10 G30                                                                                             | 148.0-149.9<br><br><br>608 US10                                                                                                                  | SATELLITE<br>COMMUNICATION<br>(25).                    |                         |
| 149.9-150.05                                                                                           | RADIONAVIGATION-<br>SATELLITE.                                                                                                                                                                                 |                                                                                          | 149.9-150.05<br>RADIONAVIGATION<br>SATELLITE.                                                                                                    | 149.9-150.05<br>RADIONAVIGATION<br>SATELLITE.                                                                                                    |                                                        |                         |



| International table                                                                           |                                                       |                            | United States table                                                 |                                                                     | FCC use designators                                             |                         |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                                    | Region 2—allocation<br>MHz                            | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                        | Non-Government<br>Allocation MHz                                    | Rule part(s)                                                    | Special-use frequencies |
| (1)                                                                                           | (2)                                                   | (3)                        | (4)                                                                 | (5)                                                                 | (6)                                                             | (7)                     |
| 609                                                                                           |                                                       |                            |                                                                     |                                                                     |                                                                 |                         |
| 150.05-153.0<br>FIXED,<br>MOBILE except<br>aeronautical mobile,<br>RADIO ASTRONOMY.           | 150.05-156.7625<br>FIXED,<br>MOBILE.                  |                            | 150.05-150.8<br>FIXED,<br>MOBILE.<br>US216 G30                      | 150.05-150.8<br><br>US216                                           |                                                                 |                         |
|                                                                                               |                                                       |                            | 150.8-156.2475                                                      | 150.8-152.0<br>LAND MOBILE.<br>NG51 NG112 NG124                     | PRIVATE LAND MOBILE<br>(90).                                    |                         |
|                                                                                               |                                                       |                            |                                                                     | 152.0-152.255<br>LAND MOBILE.<br>US216                              | DOMESTIC PUBLIC<br>LAND MOBILE (22).                            |                         |
| 610 612                                                                                       | 611 613                                               |                            | 613 US216                                                           | 152.255-152.495<br>LAND MOBILE.<br>NG124                            | PRIVATE LAND MOBILE<br>(90).                                    |                         |
|                                                                                               |                                                       |                            |                                                                     | 152.495-152.855<br>LAND MOBILE.<br>NG4                              | DOMESTIC PUBLIC<br>LAND MOBILE (22).                            |                         |
|                                                                                               |                                                       |                            |                                                                     | 152.855-156.2475<br>LAND MOBILE.<br>613<br>NG4 NG112<br>NG117 NG124 | PRIVATE LAND MOBILE<br>(90).<br>AUXILIARY<br>BROADCASTING (74). |                         |
| 153.0-154.0<br>FIXED,<br>MOBILE except<br>aeronautical mobile<br>(R),<br>Meteorological Aids. |                                                       |                            |                                                                     |                                                                     |                                                                 |                         |
| 154.0-156.7625<br>FIXED,<br>MOBILE except<br>aeronautical mobile<br>(R).                      |                                                       |                            |                                                                     |                                                                     |                                                                 |                         |
| 613                                                                                           |                                                       |                            |                                                                     |                                                                     |                                                                 |                         |
| 156.7625-156.8375                                                                             | MARITIME MOBILE<br>(distress and calling).<br>501 613 |                            | 156.2475-157.0375                                                   | 156.2475-157.0375<br><br>MARITIME MOBILE<br>NG117                   |                                                                 |                         |
| 156.8375-174.0<br>FIXED,<br>MOBILE except<br>aeronautical mobile.                             | 156.8375-174.0<br>FIXED,<br>MOBILE.                   |                            | 613<br>US77 US108<br>US107 US266                                    | 613<br>US77 US106<br>US107 US266                                    |                                                                 |                         |
| 613 614 615                                                                                   | 613 616 617 618                                       |                            | 157.0375-157.1875<br>MARITIME MOBILE.<br>613<br>US214 US266<br>G109 | 157.0375-157.1875<br><br>613<br>US214 US266                         | Private Land Mobile (90).                                       |                         |
|                                                                                               |                                                       |                            | 157.1875-157.45<br>613<br>US223 US266                               | 157.1875-157.45<br>MARITIME MOBILE.<br>613<br>US223 US266<br>NG111  | MARITIME (81 and 83).                                           |                         |
|                                                                                               |                                                       |                            | 157.45-161.575                                                      | 157.45-157.755<br>LAND MOBILE.<br>613 US266<br>NG111 NG124          | PRIVATE LAND MOBILE<br>(90).                                    |                         |
|                                                                                               |                                                       |                            |                                                                     | 157.755-158.115<br>LAND MOBILE.                                     | DOMESTIC PUBLIC<br>LAND MOBILE (22).                            |                         |



| International table                       |                                                               |                                               | United States table                                                                                                           |                                                                                                                    | FCC use designators                                                     |                         |
|-------------------------------------------|---------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                | Region 2—allocation<br>MHz                                    | Region 3—allocation<br>MHz                    | Government<br>Allocation MHz                                                                                                  | Non-Government<br>Allocation MHz                                                                                   | Rule part(s)                                                            | Special-use frequencies |
| (1)                                       | (2)                                                           | (3)                                           | (4)                                                                                                                           | (5)                                                                                                                | (6)                                                                     | (7)                     |
|                                           |                                                               |                                               |                                                                                                                               | 613                                                                                                                |                                                                         |                         |
|                                           |                                                               |                                               |                                                                                                                               | 158.115-161.575<br>LAND MOBILE NG6                                                                                 | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE<br>(90).    |                         |
|                                           |                                                               |                                               | 613 US266                                                                                                                     | 613 NG6<br>NG28 NG70<br>NG112 NG124                                                                                |                                                                         |                         |
|                                           |                                                               |                                               | 161.575-161.625                                                                                                               | 161.575-161.625<br>MARITIME MOBILE.                                                                                | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>MARITIME (81 and 83)            |                         |
|                                           |                                                               |                                               | 613 US77                                                                                                                      | 613 US77<br>NG6 NG17                                                                                               |                                                                         |                         |
|                                           |                                                               |                                               | 161.625-161.775                                                                                                               | 161.625-161.775<br>LAND MOBILE.                                                                                    | AUXILIARY<br>BROADCASTING (74).<br>DOMESTIC PUBLIC<br>LAND MOBILE (22). |                         |
|                                           |                                                               |                                               | 613                                                                                                                           | 613<br>NG6                                                                                                         |                                                                         |                         |
|                                           |                                                               |                                               | 161.775-162.0125                                                                                                              | 161.775-162.0125<br>MARITIME MOBILE.                                                                               | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>MARITIME (81 and 83).           |                         |
|                                           |                                                               |                                               | 613 US266                                                                                                                     | 613<br>US266 NG6                                                                                                   |                                                                         |                         |
|                                           |                                                               |                                               | 162.0125-173.2<br>FIXED.<br>MOBILE.                                                                                           | 162.0125-173.2                                                                                                     | Auxiliary Broadcasting<br>(74).<br>Private Land Mobile (90).            |                         |
|                                           |                                                               |                                               | 613<br>US8 US11 US13<br>US216 US223.<br>G5                                                                                    | 613<br>US8 US11 US13<br>US216 US223.                                                                               |                                                                         |                         |
|                                           |                                                               |                                               | 173.2-173.4                                                                                                                   | 173.2-173.4<br>FIXED.<br>Land Mobile.<br>NG124                                                                     | Private Land Mobile (90).                                               |                         |
|                                           |                                                               |                                               | 173.4-174.0<br>FIXED.<br>MOBILE.<br>G5                                                                                        | 173.4-174.0                                                                                                        |                                                                         |                         |
| 174-233<br>BROADCASTING.                  | 174-216<br>BROADCASTING.<br>Fixed.<br>Mobile.<br>620          | 174-233<br>FIXED.<br>MOBILE.<br>BROADCASTING. | 174-216                                                                                                                       | 174-216<br>BROADCASTING.<br>NG115                                                                                  | RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74).        |                         |
| 621 623 626 629                           | 216-220<br>FIXED.<br>MARITIME MOBILE.<br>Radiolocation 627    | 619 624 625 626<br>630                        | 216-220<br>MARITIME MOBILE.<br>Aeronautical Mobile.<br>Fixed.<br>Land Mobile.<br>Radiolocation 627<br>US210 US229 US274<br>G2 | 216-220<br>MARITIME MOBILE.<br>Aeronautical Mobile.<br>Fixed.<br>Land Mobile.<br>627<br>US210 US229 US274<br>NG121 | MARITIME (81 and 83).<br>Private Land Mobile (90).                      |                         |
|                                           | 220-225<br>AMATEUR.<br>FIXED.<br>MOBILE.<br>Radiolocation 627 |                                               | 220-225<br>FIXED.<br>MOBILE.<br>Radiolocation 627                                                                             | 220-225<br>AMATEUR.<br>FIXED.<br>MOBILE.                                                                           | AMATEUR (97).                                                           |                         |
| 223-230<br>BROADCASTING.<br>Fixed Mobile. |                                                               | 223-230<br>FIXED.                             | Fixed.                                                                                                                        |                                                                                                                    | MOBILE.                                                                 | Mobile.                 |
| 622 628 629 631<br>632 633 634 635.       | 225-235<br>FIXED.<br>MOBILE.                                  | 636 637                                       | 225.0-328.6<br>FIXED.<br>MOBILE.                                                                                              | 225.0-328.6                                                                                                        |                                                                         |                         |
| 230-235<br>FIXED.<br>MOBILE.              |                                                               | 230-235<br>FIXED.<br>MOBILE.                  | 501 592 642 644                                                                                                               | 501 592 642 644.                                                                                                   |                                                                         |                         |



| International table            |                                                                                                                                                                                                                              |                                        | United States table                                                                                                                                                                                       |                                                                                                                                                                                                           | FCC use designators                  |                                |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------|
| Region 1—allocation MHz        | Region 2—allocation MHz                                                                                                                                                                                                      | Region 3—allocation MHz                | Government Allocation MHz                                                                                                                                                                                 | Non-Government Allocation MHz                                                                                                                                                                             | Rule part(s)                         | Special-use frequencies        |
| (1)                            | (2)                                                                                                                                                                                                                          | (3)                                    | (4)                                                                                                                                                                                                       | (5)                                                                                                                                                                                                       | (6)                                  | (7)                            |
| 629 632 633 634<br>635 638 639 |                                                                                                                                                                                                                              | AERONAUTICAL<br>RADIONAVIGATION<br>637 | G30 G100                                                                                                                                                                                                  |                                                                                                                                                                                                           |                                      |                                |
| 235-267                        | FIXED.<br>MOBILE.<br>501 592 635 640<br>641 642                                                                                                                                                                              |                                        |                                                                                                                                                                                                           |                                                                                                                                                                                                           |                                      |                                |
| 267-272                        | FIXED.<br>MOBILE.<br>Space Operation (space-to-Earth).<br>641 643                                                                                                                                                            |                                        |                                                                                                                                                                                                           |                                                                                                                                                                                                           |                                      |                                |
| 272-273                        | SPACE OPERATION<br>(space-to-Earth)<br>FIXED.<br>MOBILE.<br>641                                                                                                                                                              |                                        |                                                                                                                                                                                                           |                                                                                                                                                                                                           |                                      |                                |
| 273-322                        | FIXED.<br>MOBILE.<br>641                                                                                                                                                                                                     |                                        |                                                                                                                                                                                                           |                                                                                                                                                                                                           |                                      |                                |
| 322.0-328.6                    | FIXED.<br>MOBILE.<br>RADIO ASTRONOMY<br>644                                                                                                                                                                                  |                                        |                                                                                                                                                                                                           |                                                                                                                                                                                                           |                                      |                                |
| 328.6-335.4                    | AERONAUTICAL<br>RADIONAVIGATION.<br>645                                                                                                                                                                                      |                                        | 328.6-335.4<br>AERONAUTICAL<br>RADIONAVIGATION.<br>645                                                                                                                                                    | 328.6-335.4<br>AERONAUTICAL<br>RADIONAVIGATION.<br>645                                                                                                                                                    |                                      |                                |
| 335.4-399.9                    | FIXED.<br>MOBILE.<br>641                                                                                                                                                                                                     |                                        | 335.4-399.9<br>FIXED.<br>MOBILE.<br>G30 G100                                                                                                                                                              | 335.4-399.9                                                                                                                                                                                               |                                      |                                |
| 399.9-400.05                   | RADIONAVIGATION-<br>SATELLITE.<br>609                                                                                                                                                                                        |                                        | 399.9-400.05<br>RADIONAVIGATION-<br>SATELLITE.                                                                                                                                                            | 399.9-400.05<br>RADIONAVIGATION-<br>SATELLITE.                                                                                                                                                            |                                      |                                |
| 400.05-400.15                  | STANDARD<br>FREQUENCY AND<br>TIME SIGNAL-<br>SATELLITE.<br>(400.1 MHz)<br>646 647                                                                                                                                            |                                        | 400.05-400.15<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL-<br>SATELLITE.<br>646                                                                                                                           | 400.05-400.15<br>STANDARD<br>FREQUENCY AND<br>TIME SIGNAL-<br>SATELLITE.<br>646                                                                                                                           |                                      | 400.1 MHz: Standard frequency. |
| 400.15-401.0                   | METEOROLOGICAL<br>AIDS.<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>SPACE RESEARCH<br>(space-to-Earth).<br>Space Operation (space-<br>to-Earth).<br>647                                                         |                                        | 400.15-401.0<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>SPACE RESEARCH<br>(space-to-Earth).<br>Space Operation (space-<br>to-Earth).<br>US70        | 400.15-401.0<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>SPACE RESEARCH<br>(space-to-Earth).<br>Space Operation (space-<br>to-Earth).<br>US70                                                              | SATELLITE<br>COMMUNICATION<br>(25).  |                                |
| 401-402                        | METEOROLOGICAL<br>AIDS.<br>SPACE OPERATION<br>(space-to-Earth).<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Fixed.<br>Meteorological-Satellite<br>(Earth-to-space).<br>Mobile except<br>aeronautical mobile. |                                        | 401-402<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>SPACE OPERATION<br>(space-to-Earth).<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Meteorological-Satellite<br>(Earth-to-space).<br>US70 | 401-402<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>SPACE OPERATION<br>(space-to-Earth).<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Meteorological-Satellite<br>(Earth-to-space).<br>US70 | SATELLITE<br>COMMUNICATIONS<br>(25). |                                |
| 402-403                        |                                                                                                                                                                                                                              |                                        | 402-403                                                                                                                                                                                                   | 402-403                                                                                                                                                                                                   |                                      |                                |



| International table                                                                            |                                                                                                                                                                                      |                            | United States table                                                                                                                                        |                                                                                                                                                                           | FCC use designators                                                                                                                                                                           |                         |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                                     | Region 2—allocation<br>MHz                                                                                                                                                           | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                                                                                                               | Non-Government<br>Allocation MHz                                                                                                                                          | Rule part(s)                                                                                                                                                                                  | Special-use frequencies |
| (1)                                                                                            | (2)                                                                                                                                                                                  | (3)                        | (4)                                                                                                                                                        | (5)                                                                                                                                                                       | (6)                                                                                                                                                                                           | (7)                     |
|                                                                                                | METEOROLOGICAL<br>AIDS.<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Fixed.<br>Meteorological-Satellite<br>(Earth-to-space).<br>Mobile except<br>aeronautical mobile. |                            | METEOROLOGICAL<br>AIDS (radiosonde).<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Meteorological-Satellite<br>(Earth-to-space).<br><br>US70 | METEOROLOGICAL<br>AIDS (radiosonde).<br>Earth Exploration-<br>Satellite (Earth-to-<br>space).<br>Meteorological-Satellite.<br>(Earth-to-space).<br><br>US70               |                                                                                                                                                                                               |                         |
| 403-406                                                                                        | METEOROLOGICAL<br>AIDS.<br>Fixed.<br>Mobile except<br>aeronautical mobile.<br>648                                                                                                    |                            | 403-406<br>METEOROLOGICAL<br>AIDS (radiosonde).<br><br>US70 G6                                                                                             | 403-406<br>METEOROLOGICAL<br>AIDS (radiosonde).<br><br>US70                                                                                                               |                                                                                                                                                                                               |                         |
| 406.0-406.1                                                                                    | MOBILE-SATELLITE<br>(Earth-to-space).<br>649                                                                                                                                         |                            | 406.0-406.1<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>649                                                                                                | 406.0-406.1<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>649                                                                                                               |                                                                                                                                                                                               |                         |
| 406.1-410.0                                                                                    | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br><br>648 650                                                                                                   |                            | 406.1-410.0<br>FIXED.<br>MOBILE.<br>RADIO ASTRONOMY.<br><br>US13 US74 US117<br>G5 G8                                                                       | 406.1-410.0<br>RADIO ASTRONOMY.<br><br>US13 US74 US117                                                                                                                    |                                                                                                                                                                                               |                         |
| 410-420                                                                                        | FIXED.<br>MOBILE except<br>aeronautical mobile.                                                                                                                                      |                            | 410-420<br>FIXED.<br>MOBILE.<br><br>US13 G5                                                                                                                | 410-420<br><br>US13                                                                                                                                                       |                                                                                                                                                                                               |                         |
| 420-430                                                                                        | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation.<br><br>651 652 653                                                                                                 |                            | 420-450<br>RADIOLOCATION.<br><br>664 668<br>US7 US87 US217<br>US228 G2 G8<br>G105                                                                          | 420-450<br>Amateur.<br><br>664 668<br>US7 US87 US217<br>US228 NG135                                                                                                       | Amateur (97).                                                                                                                                                                                 |                         |
| 430-440<br>AMATEUR.<br>RADIOLOCATION.<br>653 654 655 656<br>657 658 659 661<br>662 663 664 665 | 430-440<br>RADIOLOCATION.<br>Amateur.<br><br>653 658 659 660<br>663 664                                                                                                              |                            |                                                                                                                                                            |                                                                                                                                                                           |                                                                                                                                                                                               |                         |
| 440-450                                                                                        | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation.<br>651 652 653 666<br>667 668                                                                                      |                            |                                                                                                                                                            |                                                                                                                                                                           |                                                                                                                                                                                               |                         |
| 450-460                                                                                        | FIXED.<br>MOBILE.<br><br><br>653 668 669 670                                                                                                                                         |                            | 450-460<br><br><br>668 669 670<br>US87 G105                                                                                                                | 450-451<br>LAND MOBILE.<br><br>668 US87<br><br>451-454<br>LAND MOBILE.<br><br>NG112 NG124<br><br>454-455<br>LAND MOBILE.<br><br>NG12 NG112<br><br>455-456<br>LAND MOBILE. | AUXILIARY<br>BROADCASTING (74).<br>SATELLITE<br>COMMUNICATION<br>(25).<br><br>PRIVATE LAND MOBILE<br>(90).<br><br>DOMESTIC PUBLIC<br>LAND MOBILE (22).<br><br>AUXILIARY<br>BROADCASTING (74). |                         |



| International table               |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                          | United States table                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                | FCC use designators                                                                                                                                                                                                                                                                                                                           |                         |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz        | Region 2—allocation<br>MHz                                                                                                                                                                                                                                                                                                                                                       | Region 3—allocation<br>MHz                                                                                                                                                                                               | Government<br>Allocation MHz                                                                                         | Non-Government<br>Allocation MHz                                                                                                                                                                                                                                                                                                                                                               | Rule part(s)                                                                                                                                                                                                                                                                                                                                  | Special-use frequencies |
| (1)                               | (2)                                                                                                                                                                                                                                                                                                                                                                              | (3)                                                                                                                                                                                                                      | (4)                                                                                                                  | (5)                                                                                                                                                                                                                                                                                                                                                                                            | (6)                                                                                                                                                                                                                                                                                                                                           | (7)                     |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                          |                                                                                                                      | 456-458<br>LAND MOBILE.<br>669 670<br>NG112 NG124                                                                                                                                                                                                                                                                                                                                              | PRIVATE LAND MOBILE<br>(90).                                                                                                                                                                                                                                                                                                                  |                         |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                          |                                                                                                                      | 459-460<br>LAND MOBILE.<br>NG12 NG112                                                                                                                                                                                                                                                                                                                                                          | DOMESTIC PUBLIC<br>LAND MOBILE (22).                                                                                                                                                                                                                                                                                                          |                         |
| 460-470                           | FIXED.<br>MOBILE.<br>Meteorological-Satellite<br>(space-to-Earth).<br><br>669 670 671 672                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                          | 460-470<br>Meteorological Satellite<br>(space-to-Earth).<br><br>669 670 671<br>US201 US209<br>US216                  | 460-462.5375<br>LAND MOBILE.<br><br>671<br>US201 US209<br>NG124<br><br>462.5375-462.7375<br><br>LAND MOBILE.<br>671 US201<br><br>462.7375-467.5375<br>LAND MOBILE.<br>669 671<br>US201 US209 US216<br>NG124<br><br>467.5375-467.7375<br>LAND MOBILE.<br>669 671<br>US201<br><br>467.7375-470.0<br>LAND MOBILE.<br>669 670 671<br>US201 US216<br>NG124                                          | PRIVATE LAND MOBILE<br>(90).<br><br><br><br><br>PERSONAL (95).<br><br>PRIVATE LAND MOBILE<br>(90).<br><br>PERSONAL (95).<br><br>PRIVATE LAND MOBILE<br>(90).                                                                                                                                                                                  |                         |
| 470-790<br>BROADCASTING.          | 470-512<br>BROADCASTING.<br>Fixed.<br>Mobile.<br><br>674 675<br><br>512-608<br><br>BROADCASTING.<br><br>676 680 681<br>682 683 684<br>685 686 687<br>689 693 694<br><br>678<br><br>608-614<br><br>RADIO ASTRONOMY.<br>Mobile-Satellite except<br>aeronautical mobile-<br>satellite (Earth-to-<br>space).<br><br>614-806<br>BROADCASTING.<br>Fixed.<br>Mobile.<br><br>675 692 693 | 470-585<br>FIXED.<br>MOBILE.<br>BROADCASTING<br><br>673 677 679<br><br>585-610<br><br>FIXED.<br>MOBILE.<br>BROADCASTING.<br>RADIONAVIGATION.<br><br>688 689 690<br><br>610-890<br><br>FIXED.<br>MOBILE.<br>BROADCASTING. | 470-512<br><br><br>512-608<br><br>608-614<br><br>RADIO ASTRONOMY.<br><br>US74 US246<br><br>614-806<br>DBROADCASTING. | 470-512<br>BROADCASTING.<br>LAND MOBILE.<br><br>NG66 NG114 NG127<br><br>512-608<br><br>BROADCASTING.<br><br>608-614<br><br>RADIO ASTRONOMY.<br><br>US74 US246<br><br>614-806<br>RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74).<br><br>RADIO ASTRONOMY.<br><br>US74 US246<br><br>614-806<br>RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74).<br><br>NG30 NG43 | RADIO BROADCAST<br>(TV) (73).<br>DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE<br>(90).<br>Auxiliary Broadcasting<br>(74).<br><br>RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74).<br><br>RADIO ASTRONOMY.<br><br>US74 US246<br><br>614-806<br>RADIO BROADCAST<br>(TV) (73).<br>Auxiliary Broadcasting<br>(74). |                         |
| 790-862<br>FIXED.<br>BROADCASTING |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                          |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                               |                         |



| International table                                                                                      |                                                                                                         |                                                                        | United States table                                                           |                                                      | FCC use designators                                                                                                     |                                                                   |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Region 1—allocation<br>MHz                                                                               | Region 2—allocation<br>MHz                                                                              | Region 3—allocation<br>MHz                                             | Government<br>Allocation MHz                                                  | Non-Government<br>Allocation MHz                     | Rule part(s)                                                                                                            | Special-use frequencies                                           |
| (1)                                                                                                      | (2)                                                                                                     | (3)                                                                    | (4)                                                                           | (5)                                                  | (6)                                                                                                                     | (7)                                                               |
| 694 695 696<br>697 698 699 702                                                                           | 806-890                                                                                                 |                                                                        | 806-902                                                                       | 806-821<br><br>LAND MOBILE.<br><br>NG30 NG43 NG63    | PRIVATE LAND MOBILE<br>(90).                                                                                            |                                                                   |
| 862-890<br><br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING 703.                      | FIXED.<br>MOBILE.<br>BROADCASTING.                                                                      |                                                                        |                                                                               | 821-825<br><br>LAND MOBILE.<br><br>NG30 NG43 NG63    | Reserve.                                                                                                                |                                                                   |
| 699 704                                                                                                  | 700                                                                                                     | 677 688 689<br>690 691 693<br>701                                      | US116 US268 G2                                                                | 825-845<br>LAND MOBILE.<br>NG30 NG43 NG63            | DOMESTIC PUBLIC<br>LAND MOBILE (22).                                                                                    |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 845-851<br>LAND MOBILE.<br>NG30 NG63                 | Reserve.                                                                                                                |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 851-866<br>LAND MOBILE.<br>NG30 NG63                 | PRIVATE LAND MOBILE<br>(90).                                                                                            |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 866-870<br>LAND MOBILE.<br>NG30 NG63                 | Reserve.                                                                                                                |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 870-890<br>LAND MOBILE.<br>NG30 NG63                 | DOMESTIC PUBLIC<br>LAND MOBILE (22).                                                                                    |                                                                   |
| 890-942<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING 703.<br>Radiolocation.<br>704 | 890-902<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation.<br>705                     | 890-942<br>FIXED.<br>MOBILE.<br>BROADCASTING.<br>Radiolocation.<br>706 |                                                                               | 890-902<br>LAND MOBILE.<br>US116 US268               | Reserve.                                                                                                                |                                                                   |
|                                                                                                          | 902-928<br>FIXED.<br>Amateur.<br><br>Mobile except<br>aeronautical mobile.<br>Radiolocation.<br>705 707 |                                                                        | 902-928<br>RADIOLOCATION.<br><br>707<br>US215 US218 US267<br>US275<br>G11 G59 | 902-928<br><br>707<br>US215 US218 US267<br>US275     | Amateur (97).                                                                                                           | 915 ± 13 MHz:<br>Industrial, scientific<br>and medical frequency. |
|                                                                                                          | 928-942<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation.<br><br>705                 |                                                                        | 928-947<br>US116 US215 US268<br>G2                                            | 928-929<br>FIXED.<br>US116 US215 US268               | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE<br>(90).<br>PRIVATE<br>OPERATIONAL FIXED<br>MICROWAVE (94). |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 929-932<br>LAND MOBILE.<br><br>US116 US215 US268     | DOMESTIC PUBLIC<br>LAND MOBILE (22).<br>PRIVATE LAND MOBILE<br>(90).                                                    |                                                                   |
|                                                                                                          |                                                                                                         |                                                                        |                                                                               | 932-947<br>LAND MOBILE.<br>US116 US215 US268<br>NG64 | Reserve.                                                                                                                |                                                                   |
| 942-960                                                                                                  | 942-960                                                                                                 | 942-960                                                                | 947-960                                                                       | 947-960                                              | AUXILIARY<br>BROADCASTING (74).                                                                                         |                                                                   |
| FIXED.<br>MOBILE except<br>aeronautical mobile.                                                          | FIXED.<br>Mobile.                                                                                       | FIXED.<br>MOBILE.<br>BROADCASTING.                                     |                                                                               |                                                      |                                                                                                                         |                                                                   |



| International table                                                                                                           |                                                                                                |                                                                                                    | United States table                                                                                       |                                                                                                             | FCC use designators                                                                                          |                         |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation MHz                                                                                                       | Region 2—allocation MHz                                                                        | Region 3—allocation MHz                                                                            | Government Allocation MHz                                                                                 | Non-Government Allocation MHz                                                                               | Rule part(s)                                                                                                 | Special-use frequencies |
| (1)                                                                                                                           | (2)                                                                                            | (3)                                                                                                | (4)                                                                                                       | (5)                                                                                                         | (6)                                                                                                          | (7)                     |
| BROADCASTING 703                                                                                                              |                                                                                                |                                                                                                    |                                                                                                           | FIXED.                                                                                                      | DOMESTIC PUBLIC LAND MOBILE (22). INTERNATIONAL FIXED PUBLIC (23). PRIVATE OPERATIONAL FIXED MICROWAVE (94). |                         |
| 699 704                                                                                                                       | 708                                                                                            | 701                                                                                                |                                                                                                           |                                                                                                             |                                                                                                              |                         |
| 960-1215                                                                                                                      | AERONAUTICAL RADIONAVIGATION. 709                                                              |                                                                                                    | 960-1215 AERONAUTICAL RADIONAVIGATION. 709 US224                                                          | 960-1215 AERONAUTICAL RADIONAVIGATION. 709 US224                                                            | AVIATION (87).                                                                                               |                         |
| 1215-1240                                                                                                                     | RADIOLOCATION. RADIONAVIGATION-SATELLITE (space-to-Earth) 710. 711 712 713                     |                                                                                                    | 1215-1240 RADIOLOCATION. RADIONAVIGATION-SATELLITE (space-to-Earth). 713 G56                              | 1215-1240 713                                                                                               |                                                                                                              |                         |
| 1240-1260                                                                                                                     | RADIOLOCATION. RADIONAVIGATION-SATELLITE (space-to-Earth) 710. Amateur. 711 712 713 714        |                                                                                                    | 1240-1300 RADIOLOCATION.                                                                                  | 1240-1300 Amateur.                                                                                          | Amateur (97).                                                                                                |                         |
| 1260-1300                                                                                                                     | RADIOLOCATION. Amateur. 664 711 712 713 714                                                    |                                                                                                    | 664 713 714 G56                                                                                           | 664 713 714                                                                                                 |                                                                                                              |                         |
| 1300-1350                                                                                                                     | AERONAUTICAL RADIONAVIGATION 717 Radiolocation 715 716 718                                     |                                                                                                    | 1300-1350 AERONAUTICAL RADIONAVIGATION 717 Radiolocation 718 G2                                           | 1300-1350 AERONAUTICAL RADIONAVIGATION 717 718                                                              | AVIATION (87).                                                                                               |                         |
| 1350-1400 FIXED. MOBILE. RADIOLOCATION. 718 719 720                                                                           | 1350-1400 RADIOLOCATION. 714 718 720                                                           |                                                                                                    | 1350-1400 RADIOLOCATION. Fixed. Mobile. 714 718 720 G2 G27 G114                                           | 1350-1400 714 718 720                                                                                       |                                                                                                              |                         |
| 1400-1427                                                                                                                     | EARTH EXPLORATION-SATELLITE (passive). RADIO ASTRONOMY SPACE RESEARCH (passive). 721 722       |                                                                                                    | 1400-1427 EARTH EXPLORATION-SATELLITE (passive). RADIO ASTRONOMY SPACE RESEARCH (passive). 722 US74 US246 | 1400-1427 EARTH EXPLORATION-SATELLITE (passive). RADIO ASTRONOMY SPACE RESEARCH (passive). 722 US74 US246   |                                                                                                              |                         |
| 1427-1429                                                                                                                     | SPACE OPERATION (Earth-to-space). FIXED. MOBILE except aeronautical mobile. 722                |                                                                                                    | 1427-1429 SPACE OPERATION (Earth-to-space). FIXED. MOBILE except aeronautical mobile. 722 G30             | 1427-1429 SPACE OPERATION (Earth-to-space). Fixed (telemetry). Land Mobile (telemetry and telecommand). 722 | Private Land Mobile (90). Satellite Communications (25).                                                     |                         |
| 1429-1525 FIXED. MOBILE except aeronautical mobile. 722                                                                       | 1429-1525 FIXED. MOBILE 723 722                                                                |                                                                                                    | 1429-1435 FIXED. MOBILE. 722 G30                                                                          | 1429-1435 Land Mobile (telemetry and telecommand). Fixed (telemetry) 722                                    | Private Land Mobile (90).                                                                                    |                         |
| 1525-1530 SPACE OPERATION (space-to-Earth). FIXED. Earth Exploration-Satellite. Mobile except aeronautical mobile 724 722 725 | 1525-1530 SPACE OPERATION (space-to-Earth). Earth Exploration-Satellite. Fixed. Mobile 723 722 | 1525-1530 SPACE OPERATION (space-to-Earth). FIXED. Earth Exploration-Satellite. Mobile 723 724 722 | 1435-1530 MOBILE (aeronautical telemetry). 722 US78                                                       | 1435-1530 MOBILE (aeronautical telemetry). 722 US78                                                         | AVIATION (87).                                                                                               |                         |



| International table                                                                                                                                                                                        |                                                                                                                                                                                 |                            | United States table                                                                                                                  |                                                                                                                                      | FCC use designators                                           |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                                                                                                                                                 | Region 2—allocation<br>MHz                                                                                                                                                      | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                                                                                         | Non-Government<br>Allocation MHz                                                                                                     | Rule part(s)                                                  | Special-use frequencies |
| (1)                                                                                                                                                                                                        | (2)                                                                                                                                                                             | (3)                        | (4)                                                                                                                                  | (5)                                                                                                                                  | (6)                                                           | (7)                     |
| 1530-1535<br>SPACE OPERATION<br>(space-to-Earth).<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>Earth Exploration-<br>Satellite.<br>Fixed.<br>Mobile except<br>aeronautical mobile.<br>722 726 | 1530-1535<br>SPACE OPERATION<br>(space-to-Earth).<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>Earth Exploration-<br>Satellite.<br>Fixed.<br>Mobile 723<br>722 726 |                            | 1530-1535<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>Mobile (aeronautical<br>telemetry).<br>722 US78 US272            | 1530-1535<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>Mobile (aeronautical<br>telemetry).<br>722 US78 US272            | AVIATION (87).<br>SATELLITE<br>COMMUNICATION<br>(25).         |                         |
| 1535-1544                                                                                                                                                                                                  | MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>722 727                                                                                                                  |                            | 1535-1544<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>722                                                              | 1535-1544<br>MARITIME MOBILE-<br>SATELLITE (space-to-<br>Earth).<br>722                                                              | MARITIME (81 and 83).<br>SATELLITE<br>COMMUNICATIONS<br>(25). |                         |
| 1544-1545                                                                                                                                                                                                  | MOBILE-SATELLITE<br>(space-to-Earth).<br>722 727 728                                                                                                                            |                            | 1544-1545<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>722 728                                                                        | 1544-1545<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>722 728                                                                        | MARITIME (81 and 83).<br>SATELLITE<br>COMMUNICATION<br>(25).  |                         |
| 1545-1559                                                                                                                                                                                                  | AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (space-to-Earth).<br>722 727 729 730                                                                                                    |                            | 1545-1559<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (space-to-Earth).<br>722 729                                                    | 1545-1559<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (space-to-Earth).<br>722 729                                                    | AVIATION (87).                                                |                         |
| 1559-1610                                                                                                                                                                                                  | AERONAUTICAL<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE (space-to-<br>Earth).<br>722 727 730 731                                                                      |                            | 1559-1610<br>AERONAUTICAL<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE (space-to-<br>Earth).<br>722 US39 US40<br>US208 US260 | 1559-1610<br>AERONAUTICAL<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE (space-to-<br>Earth).<br>722 US39 US40<br>US208 US260 | AVIATION (87).                                                |                         |
| 1610-1626.5                                                                                                                                                                                                | AERONAUTICAL<br>RADIONAVIGATION.<br>722 727 730 732<br>733 734                                                                                                                  |                            | 1610-1626.5<br>AERONAUTICAL<br>RADIONAVIGATION.<br>722 732 733 734<br>US39 US40 US208<br>US260                                       | 1610-1626.5<br>AERONAUTICAL<br>RADIONAVIGATION.<br>722 732 733 734<br>US39 US40 US208<br>US260                                       | AVIATION (87).                                                |                         |
| 1626.5-1645.5                                                                                                                                                                                              | MARITIME MOBILE-<br>SATELLITE (Earth-to-<br>space).<br>722 727 730                                                                                                              |                            | 1626.5-1645.5<br>MARITIME MOBILE-<br>SATELLITE (Earth-to-<br>space).<br>722 US39                                                     | 1626.5-1645.5<br>MARITIME MOBILE-<br>SATELLITE (Earth-to-<br>space).<br>722 US39                                                     | MARITIME (81 and 83).<br>SATELLITE<br>COMMUNICATION<br>(25).  |                         |
| 1645.5-1646.5                                                                                                                                                                                              | MOBILE-SATELLITE<br>(Earth-to-space).<br>722 728                                                                                                                                |                            | 1645.5-1646.5<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>722 728 US39                                                               | 1645.5-1646.5<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>722 728 US39                                                               | MARITIME (81 and 83).<br>SATELLITE<br>COMMUNICATION<br>(25).  |                         |
| 1646.5-1660                                                                                                                                                                                                | AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>722 727 730 735                                                                                                    |                            | 1646.5-1660<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>722 735 US39                                             | 1646.5-1660<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>722 735 US39                                             | AVIATION (87).                                                |                         |
| 1660-1660.5                                                                                                                                                                                                | AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>RADIO ASTRONOMY.<br>722 735 736                                                                                    |                            | 1660-1660.5<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>RADIO ASTRONOMY.<br>722 735 736                          | 1660-1660.5<br>AERONAUTICAL<br>MOBILE-SATELLITE<br>(R) (Earth-to-space).<br>RADIO ASTRONOMY.<br>722 735 736                          | AVIATION (87).                                                |                         |
| 1660.5-1668.4                                                                                                                                                                                              | RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>Fixed.<br>Mobile except<br>aeronautical mobile.                                                                             |                            | 1660.5-1668.4<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 735 736                                                     | 1660.5-1668.4<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 735 736                                                     |                                                               |                         |



| International table                                                                                                                                |                                                                                                                                         |                            | United States table                                                                                                      |                                                                                                                          | FCC use designators                                                               |                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                                                                                         | Region 2—allocation<br>MHz                                                                                                              | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                                                                             | Non-Government<br>Allocation MHz                                                                                         | Rule part(s)                                                                      | Special-use frequencies |
| (1)                                                                                                                                                | (2)                                                                                                                                     | (3)                        | (4)                                                                                                                      | (5)                                                                                                                      | (6)                                                                               | (7)                     |
|                                                                                                                                                    | 722 736 737 738<br>739                                                                                                                  |                            | 722 US74 US246                                                                                                           | 722 US74 US246                                                                                                           |                                                                                   |                         |
| 1668.4-1670.0                                                                                                                                      | METEOROLOGICAL<br>AIDS.<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY<br>722 736                                |                            | 1668.4-1670.0<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>RADIO ASTRONOMY.<br><br>722 736 US74 US99                       | 1668.4-1670.0<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>RADIO ASTRONOMY.<br><br>722 736 US74 US99                       |                                                                                   |                         |
| 1670-1690                                                                                                                                          | METEOROLOGICAL<br>AIDS.<br>FIXED.<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>MOBILE except<br>aeronautical mobile.<br>722 |                            | 1670-1690<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>722 US211 | 1670-1690<br>METEOROLOGICAL<br>AIDS (radiosonde).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>722 US211 |                                                                                   |                         |
| 1690-1700<br>METEOROLOGICAL<br>AIDS.<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>Mobile except<br>aeronautical mobile.<br>671 722 741 | 1690-1700<br>METEOROLOGICAL<br>AIDS.<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>671 722 740 742                       |                            | 1690-1700<br>METEOROLOGICAL-<br>AIDS (Radiosonde).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>671 722  | 1690-1700<br>METEOROLOGICAL-<br>AIDS (Radiosonde).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>671 722  |                                                                                   |                         |
| 1700-1710<br>FIXED.<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>Mobile except<br>aeronautical mobile.<br>671 722                      | 1700-1710<br>FIXED<br>METEOROLOGICAL<br>SATELLITE (space-to-<br>Earth).<br>MOBILE except<br>aeronautical mobile.<br>671 722 743         |                            | 1700-1710<br>FIXED<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br><br>671 722<br>G118                          | 1700-1710<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>Fixed.<br><br>671 722                                 |                                                                                   |                         |
| 1710-2290<br>FIXED.<br>Mobile.                                                                                                                     | 1710-2290<br>FIXED.<br>MOBILE.                                                                                                          |                            | 1710-1850<br>FIXED.<br>MOBILE.<br>722 US256 G42                                                                          | 1710-1850<br><br><br>722 US256                                                                                           |                                                                                   |                         |
| 722 744 746 747<br>748 750                                                                                                                         | 722 744 745 746<br>747 748 749 750                                                                                                      |                            | 1850-1990                                                                                                                | 1850-1990<br>FIXED.                                                                                                      | 1850-1990<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).                      |                         |
|                                                                                                                                                    |                                                                                                                                         |                            | 1990-2110<br>FIXED.<br>MOBILE.<br>US90 US111 US219<br>US222                                                              | 1990-2110<br>FIXED.<br>MOBILE.<br>US90 US111 US219<br>US222 NG23 NG118                                                   | AUXILIARY<br>BROADCASTING (74).                                                   |                         |
|                                                                                                                                                    |                                                                                                                                         |                            | 2110-2200<br><br><br>US111<br>US252                                                                                      | 2110-2200<br>FIXED.<br><br>US111<br>US252<br>NG23                                                                        | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
|                                                                                                                                                    |                                                                                                                                         |                            | 2200-2290<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(space-to-Earth)<br>(space-to-space)<br>G101                         | 2200-2290                                                                                                                |                                                                                   |                         |
| 2290-2300<br>FIXED.<br>SPACE RESEARCH<br>(space-to-Earth)<br>(deep space).<br>MOBILE except aero-<br>nautical mobile.                              | 2290-2300<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>SPACE RESEARCH<br>(space-to-Earth)<br>(deep space).                     |                            | 2290-2300<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>SPACE RESEARCH<br>(space-to-Earth)<br>(deep space only). | 2290-2300<br>SPACE RESEARCH<br>(space-to-Earth)<br>(deep space only).                                                    |                                                                                   |                         |
| 2300-2450                                                                                                                                          | 2300-2450                                                                                                                               |                            | 2300-2310                                                                                                                | 2300-2310                                                                                                                |                                                                                   |                         |



| International table                                                                                                                                                                                                |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                    | United States table                                                                                                           |                                                                                                                                                      | FCC use designators                                                                                                |                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Region 1—allocation<br>MHz                                                                                                                                                                                         | Region 2—allocation<br>MHz                                                                                                                                                                                                                                                    | Region 3—allocation<br>MHz                                                                                                                                                                                                                                                         | Government<br>Allocation MHz                                                                                                  | Non-Government<br>Allocation MHz                                                                                                                     | Rule part(s)                                                                                                       | Special-use frequencies                                            |
| (1)                                                                                                                                                                                                                | (2)                                                                                                                                                                                                                                                                           | (3)                                                                                                                                                                                                                                                                                | (4)                                                                                                                           | (5)                                                                                                                                                  | (6)                                                                                                                | (7)                                                                |
| FIXED.<br>Amateur.<br>Mobile.<br>Radiolocation.                                                                                                                                                                    | FIXED.<br>MOBILE.<br>RADIOLOCATION.<br>Amateur.                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                    | RADIOLOCATION<br>Fixed.<br>Mobile.<br><br>US253 G2                                                                            | Amateur.<br><br><br>US253                                                                                                                            | Amateur (97).                                                                                                      |                                                                    |
|                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                    | 2310-2390<br>MOBILE.<br>RADIOLOCATION.<br>Fixed.<br>US276 G2                                                                  | 2310-2390<br>MOBILE<br><br>US276                                                                                                                     |                                                                                                                    |                                                                    |
| 664 752                                                                                                                                                                                                            | 664 751 752                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                    | 2390-2450<br>RADIOLOCATION.<br>664 752 G2                                                                                     | 2390-2450<br>Amateur.<br>664 752                                                                                                                     | Amateur (97).                                                                                                      |                                                                    |
| 2450-2500<br>FIXED.<br>MOBILE.<br>Radiolocation.                                                                                                                                                                   | 2450-2500<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                    | 2450-2500                                                                                                                     | 2450-2500<br>FIXED.<br>MOBILE.<br>Radiolocation.                                                                                                     | AUXILIARY<br>BROADCASTING (74).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).<br>PRIVATE LAND MOBILE<br>(90). | 2450 ± 50 MHz:<br>Industrial, scientific<br>and medical frequency. |
| 752 753                                                                                                                                                                                                            | 752                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                    | 752 US41                                                                                                                      | 752 US41                                                                                                                                             |                                                                                                                    |                                                                    |
| 2500-2655<br>FIXED 762 763 764<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760                                                                                                   | 2500-2655<br>FIXED 762 764<br>FIXED-SATELLITE<br>(space-to-Earth) 761<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760                                                                                                                       | 2500-2535<br>FIXED 762 764<br>FIXED-SATELLITE<br>(space-to-Earth) 761<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760<br>754<br><br>2535-2655<br>FIXED 762 764<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760 | 2500-2655                                                                                                                     | 2500-2655<br>FIXED.<br>BROADCASTING-<br>SATELLITE.                                                                                                   | AUXILIARY<br>BROADCASTING (74).                                                                                    |                                                                    |
| 720 753 756 758<br>759                                                                                                                                                                                             | 720 755                                                                                                                                                                                                                                                                       | 720                                                                                                                                                                                                                                                                                | 720 US205 US269                                                                                                               | 720 US205 US269<br>NG47 NG101 NG102                                                                                                                  |                                                                                                                    |                                                                    |
| 2655-2690<br>FIXED 762 763 764<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760<br>Earth Exploration-<br>Satellite (passive).<br>Radio Astronomy.<br>Space Research<br>(passive). | 2655-2690<br>FIXED 762 764<br>FIXED-SATELLITE<br>(Earth-to-space)<br>(space-to-Earth) 761<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760<br>Earth Exploration-<br>Satellite (passive).<br>Radio Astronomy.<br>Space Research<br>(passive). | 2655-2690<br>FIXED 762 764<br>FIXED-SATELLITE<br>(Earth-to-space) 761<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING-<br>SATELLITE 757<br>760<br>Earth Exploration-<br>Satellite (passive).<br>Radio Astronomy.<br>Space Research<br>(passive).                          | 2655-2690<br>Earth Exploration-<br>Satellite (passive).<br>Radio Astronomy.<br>Space Research<br>(passive).                   | 2655-2690<br>FIXED.<br>BROADCASTING-<br>SATELLITE.<br>Earth Exploration-<br>Satellite (passive).<br>Radio Astronomy.<br>Space Research<br>(passive). | AUXILIARY<br>BROADCASTING (74).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).                                 |                                                                    |
| 758 759 765                                                                                                                                                                                                        | 765                                                                                                                                                                                                                                                                           | 765 766                                                                                                                                                                                                                                                                            | US205 US269                                                                                                                   | US205 US269<br>NG47 NG101 NG102                                                                                                                      |                                                                                                                    |                                                                    |
| 2690-2700                                                                                                                                                                                                          | EARTH<br>EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>767 768 769                                                                                                                                                              |                                                                                                                                                                                                                                                                                    | 2690-2700<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br><br>US74 US246 | 2690-2700<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br><br>US74 US246                        |                                                                                                                    |                                                                    |
| 2700-2900                                                                                                                                                                                                          | AERONAUTICAL<br>RADIONAVIGATION<br>717.<br>Radiolocation.<br><br>770 771                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                    | 2700-2900<br>AERONAUTICAL<br>RADIONAVIGATION<br>717.<br>METEOROLOGICAL<br>AIDS.<br>Radiolocation.<br>770 US18<br>G2 G15       | 2700-2900<br><br><br>717 770 US18                                                                                                                    |                                                                                                                    |                                                                    |
| 2900-3100                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                    | 2900-3100                                                                                                                     | 2900-3100                                                                                                                                            |                                                                                                                    |                                                                    |



| International table                                                                      |                                                                                                                          |                                                    | United States table                                                                                         |                                                                                        | FCC use designators                                                    |                         |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz                                                               | Region 2—allocation<br>MHz                                                                                               | Region 3—allocation<br>MHz                         | Government<br>Allocation MHz                                                                                | Non-Government<br>Allocation MHz                                                       | Rule part(s)                                                           | Special-use frequencies |
| (1)                                                                                      | (2)                                                                                                                      | (3)                                                | (4)                                                                                                         | (5)                                                                                    | (6)                                                                    | (7)                     |
|                                                                                          | RADIONAVIGATION<br>773 774 775<br>Radiolocation.<br><br>772                                                              |                                                    | MARITIME<br>RADIONAVIGATION<br>774 775<br>Radiolocation.<br>US44 US286 G56                                  | MARITIME<br>RADIONAVIGATION<br>774 775<br>Radiolocation.<br>US44 US286                 | MARITIME (81 and 83).                                                  |                         |
| 3100-3300                                                                                | RADIOLOCATION.<br>713 776 777 778                                                                                        |                                                    | 3100-3300<br>RADIOLOCATION.<br>713 776 778<br>US110 G59                                                     | 3100-3300<br>Radiolocation.<br>713 776 778<br>US110                                    |                                                                        |                         |
| 3300-3400<br>RADIOLOCATION                                                               | 3300-3400<br>RADIOLOCATION.<br>Amateur.<br>Fixed.<br>Mobile.<br>778 780                                                  | 3300-3400<br>RADIOLOCATION.<br>Amateur.<br>778 779 | 3300-3500<br>RADIOLOCATION.<br><br>664 778<br>US108 G31                                                     | 3300-3500<br>Amateur.<br>Radiolocation.<br><br>664 778<br>US108                        | Amateur (97).                                                          |                         |
| 3400-3600<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Mobile.<br>Radiolocation. | 3400-3500<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Amateur.<br>Mobile.<br>Radiolocation 784<br>664 783       |                                                    |                                                                                                             |                                                                                        |                                                                        |                         |
|                                                                                          | 3500-3700<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile<br>Radiolocation 784 |                                                    | 3500-3600<br>AERONAUTICAL<br>RADIONAVIGATION<br>(ground-based).<br>RADIOLOCATION<br><br>US110 G59 G110      | 3500-3600<br>Radiolocation.<br><br><br>US110                                           |                                                                        |                         |
| 781 782 785                                                                              |                                                                                                                          |                                                    | 3600-3700<br>AERONAUTICAL<br>RADIONAVIGATION<br>(ground-based).<br>RADIOLOCATION<br>US110 US245<br>G59 G110 | 3600-3700<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Radiolocation.<br><br>US110 US245 |                                                                        |                         |
| 3600-4200<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Mobile.                   | 786                                                                                                                      |                                                    | 3700-4200                                                                                                   | 3700-4200<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br><br>NG41                | DOMESTIC PUBLIC<br>FIXED (21).<br>SATELLITE<br>COMMUNICATIONS<br>(25). |                         |
| 4200-4400                                                                                | AERONAUTICAL<br>RADIONAVIGATION<br>789<br>788 790 791                                                                    |                                                    | 4200-4400<br>AERONAUTICAL<br>RADIONAVIGATION.<br>791 US261                                                  | 4200-4400<br>AERONAUTICAL<br>RADIONAVIGATION.<br>791 US261                             | AVIATION (87).                                                         |                         |
| 4400-4500                                                                                | FIXED.<br>MOBILE.                                                                                                        |                                                    | 4400-4500<br>FIXED.<br>MOBILE.                                                                              | 4400-4500                                                                              |                                                                        |                         |
| 4500-4800                                                                                | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>792                                                         |                                                    | 4500-4800<br>FIXED.<br>MOBILE.<br><br>US245                                                                 | 4500-4800<br>FIXED-SATELLITE<br>(space-to-Earth).<br><br>US245                         |                                                                        |                         |
| 4800-4990                                                                                | FIXED.<br>MOBILE 793<br>Radio Astronomy.<br>720 778 794                                                                  |                                                    | 4800-4990<br>FIXED.<br>MOBILE.<br><br>720 778<br>US203 US257                                                | 4800-4990<br><br><br>720 778<br>US203 US257                                            |                                                                        |                         |
| 4990-5000                                                                                | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>Space Research<br>(passive).<br>795               |                                                    | 4990-5000<br>RADIO ASTRONOMY.<br>Space Research<br>(passive).<br><br>US74 US246                             | 4990-5000<br>RADIO ASTRONOMY.<br>Space Research<br>(passive).<br><br>US74 US246        |                                                                        |                         |
| 5000-5250                                                                                |                                                                                                                          |                                                    | 5000-5250                                                                                                   | 5000-5250                                                                              |                                                                        |                         |



| International table                                                                                           |                                                                                                             |                                                                                                 | United States table                                                                                         |                                                                                                                                                                               | FCC use designators                                                                                                                             |                                                                  |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Region 1—allocation<br>MHz                                                                                    | Region 2—allocation<br>MHz                                                                                  | Region 3—allocation<br>MHz                                                                      | Government<br>Allocation MHz                                                                                | Non-Government<br>Allocation MHz                                                                                                                                              | Rule part(s)                                                                                                                                    | Special-use frequencies                                          |
| (1)                                                                                                           | (2)                                                                                                         | (3)                                                                                             | (4)                                                                                                         | (5)                                                                                                                                                                           | (6)                                                                                                                                             | (7)                                                              |
|                                                                                                               | AERONAUTICAL<br>RADIONAVIGATION.<br>733 796 797                                                             |                                                                                                 | AERONAUTICAL<br>RADIONAVIGATION.<br>733 796 797<br>US211 US260                                              | AERONAUTICAL<br>RADIONAVIGATION.<br>733 796 797<br>US211 US260                                                                                                                | AVIATION (87).                                                                                                                                  |                                                                  |
| 5250-5255                                                                                                     | RADIOLOCATION.<br>Space Research.<br>713 798                                                                |                                                                                                 | 5250-5350<br>RADIOLOCATION.                                                                                 | 5250-5350<br>Radiolocation.                                                                                                                                                   |                                                                                                                                                 |                                                                  |
| 5255-5350                                                                                                     | RADIOLOCATION.<br>713 798                                                                                   |                                                                                                 | 713 US110<br>G59                                                                                            | 713 US110                                                                                                                                                                     |                                                                                                                                                 |                                                                  |
| 5350-5460                                                                                                     | AERONAUTICAL<br>RADIONAVIGATION<br>799<br>Radiolocation.                                                    |                                                                                                 | 5350-5460<br>AERONAUTICAL<br>RADIONAVIGATION<br>799<br>RADIOLOCATION.<br>US48 G56                           | 5350-5460<br>AERONAUTICAL<br>RADIONAVIGATION<br>799<br>Radiolocation.<br>US48                                                                                                 | AVIATION (87).                                                                                                                                  |                                                                  |
| 5460-5470                                                                                                     | RADIONAVIGATION<br>799<br>Radiolocation.                                                                    |                                                                                                 | 5460-5470<br>RADIONAVIGATION<br>799<br>Radiolocation.<br>US49 US65 G56                                      | 5460-5470<br>RADIONAVIGATION<br>799<br>Radiolocation.<br>US49 US65                                                                                                            |                                                                                                                                                 |                                                                  |
| 5470-5650                                                                                                     | MARITIME<br>RADIONAVIGATION<br>772<br>Radiolocation.                                                        |                                                                                                 | 5470-5600<br>MARITIME<br>RADIONAVIGATION.<br>Radiolocation.<br><br>US50 US65 US286<br>G56                   | 5470-5600<br>MARITIME<br>RADIONAVIGATION<br>Radiolocation.<br><br>US50 US65 US286<br>G56                                                                                      | MARITIME (81 and 83).                                                                                                                           |                                                                  |
|                                                                                                               | 800 801 802                                                                                                 |                                                                                                 | 5600-5650<br>MARITIME<br>RADIONAVIGATION.<br>METEOROLOGICAL<br>AIDS.<br>Radiolocation.<br>802 US51 US65 G56 | 5600-5650<br>MARITIME<br>RADIONAVIGATION.<br>METEOROLOGICAL<br>AIDS.<br>Radiolocation.<br>802 US51 US65                                                                       | MARITIME (81 and 83).                                                                                                                           |                                                                  |
| 5650-5725                                                                                                     | RADIOLOCATION.<br>Amateur.<br>Space Research (deep<br>space).<br>664 801 803 804<br>805                     |                                                                                                 | 5650-5850<br>RADIOLOCATION.                                                                                 | 5650-5850<br>Amateur.                                                                                                                                                         | Amateur (97).<br>Industrial, Scientific, and<br>Medical Equipment<br>(18).                                                                      | 58000±75 MHz<br>Industrial, scientific<br>and medical frequency. |
| 5725-5850<br>FIXED-SATELLITE<br>(Earth-to-space).<br>RADIOLOCATION.<br>Amateur.<br>801 803 805 806<br>807 808 | 5725-5850<br>RADIOLOCATION.<br>Amateur.<br><br>803 805 806 808                                              |                                                                                                 | 664 806 808 G2                                                                                              | 644 806 808                                                                                                                                                                   |                                                                                                                                                 |                                                                  |
| 5850-5925<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.                                        | 5850-5925<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>Amateur.<br>Radiolocation.<br>806 | 5850-5925<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>Radiolocation.<br>806 | 5850-5925<br>RADIOLOCATION.                                                                                 | 5850-5925<br>FIXED-SATELLITE<br>(Earth-to-space).<br>Amateur.                                                                                                                 | Amateur (97).                                                                                                                                   |                                                                  |
| 806                                                                                                           |                                                                                                             |                                                                                                 | 806 US245 G2                                                                                                | 806 US245                                                                                                                                                                     |                                                                                                                                                 |                                                                  |
| 5925-7075                                                                                                     | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br><br>791 809                                    |                                                                                                 | 5925-7125<br><br>791 809                                                                                    | 5925-6425<br>FIXED.<br>FIXED SATELLITE<br>(Earth-to-space).<br><br>NG41<br><br>6425-6525<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>791 809 NG122<br><br>6525-6875 | DOMESTIC PUBLIC<br>FIXED (21).<br>SATELLITE<br>COMMUNICATIONS<br>(25).<br><br>DOMESTIC PUBLIC<br>FIXED (21).<br>Auxiliary Broadcasting<br>(74). |                                                                  |



| International table        |                                                                                                                                               |                            | United States table                                                                                                                                                      |                                                                                     | FCC use designators                            |                         |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|-------------------------|
| Region 1—allocation<br>MHz | Region 2—allocation<br>MHz                                                                                                                    | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                                                                                                                             | Non-Government<br>Allocation MHz                                                    | Rule part(s)                                   | Special-use frequencies |
| (1)                        | (2)                                                                                                                                           | (3)                        | (4)                                                                                                                                                                      | (5)                                                                                 | (6)                                            | (7)                     |
|                            |                                                                                                                                               |                            |                                                                                                                                                                          | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>809                               | PRIVATE OPERATION-<br>FIXED MICROWAVE<br>(94). |                         |
|                            |                                                                                                                                               |                            |                                                                                                                                                                          | 6875-7075<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>809 NG118 | AUXILIARY<br>BROADCASTING (74).                |                         |
| 7075-7250                  | FIXED.<br>MOBILE.<br>809 810 811                                                                                                              |                            |                                                                                                                                                                          | 7075-7125<br>FIXED.<br>MOBILE.<br>809 NG118                                         | AUXILIARY<br>BROADCASTING (74).                |                         |
|                            |                                                                                                                                               |                            | 7125-7190<br>FIXED.<br>809 US252 G116                                                                                                                                    | 7125-8450                                                                           |                                                |                         |
|                            |                                                                                                                                               |                            | 7190-7235<br>FIXED.<br>SPACE RESEARCH<br>(Earth-to-space).<br>809                                                                                                        |                                                                                     |                                                |                         |
|                            |                                                                                                                                               |                            | 7235-7250<br>FIXED.<br>809                                                                                                                                               | 809 US252 US258                                                                     |                                                |                         |
| 7250-7300                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>812                                                                              |                            | 7250-7300<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>Fixed.<br>G117                                                             |                                                                                     |                                                |                         |
| 7300-7450                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile.<br>812                                                |                            | 7300-7450<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Mobile-Satellite (space-<br>to-Earth).<br>G117                                                            |                                                                                     |                                                |                         |
| 7450-7550                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>MOBILE except<br>aeronautical mobile. |                            | 7450-7550<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>METEOROLOGICAL-<br>SATELLITE (space-to-<br>Earth).<br>Mobile-Satellite (space-<br>to-Earth).<br>G104 G117 |                                                                                     |                                                |                         |
| 7550-7750                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile.                                                       |                            | 7550-7750<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Mobile-Satellite (space-<br>to-Earth).<br>G117                                                            |                                                                                     |                                                |                         |
| 7750-7900                  | FIXED.<br>MOBILE except<br>aeronautical mobile.                                                                                               |                            | 7750-7900<br>FIXED.                                                                                                                                                      |                                                                                     |                                                |                         |
| 7900-7975                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>812                                                                              |                            | 7900-8025<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>Fixed.                                                                     |                                                                                     |                                                |                         |
| 7975-8025                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>812                                                                              |                            | G117                                                                                                                                                                     |                                                                                     |                                                |                         |
| 8025-8175                  | 8025-8175                                                                                                                                     | 8025-8175                  | 8025-8175                                                                                                                                                                |                                                                                     |                                                |                         |



| International table                                                                                                                                                       |                                                                                                                                                                       |                                                                                                                                                                           | United States table                                                                                                                                                                                                                          |                                                                              | FCC use designators |                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------|-------------------------|
| Region 1—allocation MHz                                                                                                                                                   | Region 2—allocation MHz                                                                                                                                               | Region 3—allocation MHz                                                                                                                                                   | Government Allocation MHz                                                                                                                                                                                                                    | Non-Government Allocation MHz                                                | Rule part(s)        | Special-use frequencies |
| (1)                                                                                                                                                                       | (2)                                                                                                                                                                   | (3)                                                                                                                                                                       | (4)                                                                                                                                                                                                                                          | (5)                                                                          | (6)                 | (7)                     |
| FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815                                                         | EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>MOBILE 814                                                            | FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815                                                            | EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>Mobile-Satellite (Earth-to-space) (no airborne transmission).<br>US258 G117                                                                  |                                                                              |                     |                         |
| 8175-8215<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>METEOROLOGICAL-SATELLITE (Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815 | 8175-8215<br>EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>METEOROLOGICAL-SATELLITE (Earth-to-space).<br>MOBILE 814 | 8175-8215<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>METEOROLOGICAL-SATELLITE (Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815 | 8175-8215<br>EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>METEOROLOGICAL-SATELLITE (Earth-to-space).<br>Mobile-Satellite (Earth-to-space) (no airborne transmissions).<br>US258 G104 G117 |                                                                              |                     |                         |
| 8215-8400<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815                                               | 8125-8400<br>EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>MOBILE 814                                               | 8215-8400<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>MOBILE.<br>Earth Exploration-Satellite (space-to-Earth) 813 815                                               | 8215-8400<br>EARTH EXPLORATION-SATELLITE (space-to-Earth).<br>FIXED.<br>FIXED-SATELLITE (Earth-to-space).<br>Mobile-Satellite (Earth-to-space) (no airborne transmissions).<br>US258 G117                                                    |                                                                              |                     |                         |
| 8400-8500                                                                                                                                                                 | FIXED.<br>MOBILE except aeronautical mobile.<br>SPACE RESEARCH (space-to-Earth) 816 817                                                                               |                                                                                                                                                                           | 8400-8450<br>FIXED.<br>SPACE RESEARCH (space-to-Earth) (deep space only).                                                                                                                                                                    |                                                                              |                     |                         |
|                                                                                                                                                                           | 818                                                                                                                                                                   |                                                                                                                                                                           | 8450-8500<br>FIXED.<br>SPACE RESEARCH (space-to-Earth).                                                                                                                                                                                      | 8450-8500<br>SPACE RESEARCH (space-to-Earth).                                |                     |                         |
| 8500-8750                                                                                                                                                                 | RADIOLOCATION.<br>713 819 820                                                                                                                                         |                                                                                                                                                                           | 8500-9000<br>RADIOLOCATION.                                                                                                                                                                                                                  | 8500-9000<br>Radiolocation.                                                  |                     |                         |
| 8750-8850                                                                                                                                                                 | RADIOLOCATION.<br>AERONAUTICAL RADIONAVIGATION 821 822                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                                                                              |                                                                              |                     |                         |
| 8850-9000                                                                                                                                                                 | RADIOLOCATION.<br>MARITIME RADIONAVIGATION 823 824                                                                                                                    |                                                                                                                                                                           | 713 US53 US110<br>G59                                                                                                                                                                                                                        | 713 US53 US110                                                               |                     |                         |
| 9000-9200                                                                                                                                                                 | AERONAUTICAL RADIONAVIGATION 717<br>Radiolocation.<br>822                                                                                                             |                                                                                                                                                                           | 9000-9200<br>AERONAUTICAL RADIONAVIGATION 717<br>Radiolocation.<br>US48 US54<br>G2 G19                                                                                                                                                       | 9000-9200<br>AERONAUTICAL RADIONAVIGATION 717<br>Radiolocation.<br>US48 US54 | AVIATION (87).      |                         |
| 9200-9300                                                                                                                                                                 | RADIOLOCATION.<br>MARITIME RADIONAVIGATION 772 823 824                                                                                                                |                                                                                                                                                                           | 9200-9300<br>MARITIME RADIONAVIGATION.<br>RADIOLOCATION.<br>US110 G59<br>772 823                                                                                                                                                             | 9200-9300<br>MARITIME RADIONAVIGATION.<br>Radiolocation.<br>US110<br>772 823 |                     |                         |



| International table        |                                                         |                            | United States table                                                                                             |                                                                                                             | FCC use designators |                         |
|----------------------------|---------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| Region 1—allocation<br>MHz | Region 2—allocation<br>MHz                              | Region 3—allocation<br>MHz | Government<br>Allocation MHz                                                                                    | Non-Government<br>Allocation MHz                                                                            | Rule part(s)        | Special-use frequencies |
| (1)                        | (2)                                                     | (3)                        | (4)                                                                                                             | (5)                                                                                                         | (6)                 | (7)                     |
| 9300-9500                  | RADIONAVIGATION<br>774 775<br>Radiolocation.<br><br>825 |                            | 9300-9500<br>RADIONAVIGATION<br>774 775<br>Meteorological Aids.<br>Radiolocation.<br>US51 US66 US67<br>US71 G56 | 9300-9500<br>RADIONAVIGATION<br>774 775<br>Meteorological Aids.<br>Radiolocation.<br>US51 US66 US67<br>US71 |                     |                         |
| 9500-9800                  | RADIOLOCATION.<br>RADIONAVIGATION.<br>713               |                            | 9500-10,000<br>RADIOLOCATION.                                                                                   | 9500-10,000<br>Radiolocation.                                                                               |                     |                         |
| 9800-10,000                | RADIOLOCATION.<br>Fixed.<br>826 827 828                 |                            | 713 826 US110                                                                                                   | 713 826 US110                                                                                               |                     |                         |

## § 2.106 Table of Frequency Allocations.

| International table                                                                                                             |                                                                                                                                                                                |                                                                       | United States table                                                                                                         |                                                                                                                             | FCC use designators                        |                         |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz                                                                                                      | Region 2—allocation<br>GHz                                                                                                                                                     | Region 3—allocation<br>GHz                                            | Government<br>Allocation GHz                                                                                                | Non-Government<br>Allocation GHz                                                                                            | Rule part(s)                               | Special-use frequencies |
| (1)                                                                                                                             | (2)                                                                                                                                                                            | (3)                                                                   | (4)                                                                                                                         | (5)                                                                                                                         | (6)                                        | (7)                     |
| 10.0-10.45<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.<br>Amateur.<br>828                                                            | 10.00-10.45<br>RADIOLOCATION.<br>Amateur.<br><br>828 829                                                                                                                       | 10.00-10.45<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.<br>Amateur.<br>828 | 10.0-10.45<br>RADIOLOCATION.<br><br>828 US58<br>US108 G32                                                                   | 10.0-10.45<br>Amateur.<br>Radiolocation.<br><br>828 US58<br>US108 NG42                                                      | Amateur (97).<br>Private Land Mobile (90). |                         |
| 10.45-10.5                                                                                                                      | RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>830                                                                                                                        |                                                                       | 10.45-10.50<br>RADIOLOCATION.<br><br>US58 US108 G32                                                                         | 10.45-10.50<br>Amateur.<br>Amateur-Satellite.<br>Radiolocation.<br>US58 US108<br>NG42 NG134                                 | Amateur (97).<br>Private Land Mobile (90). |                         |
| 10.50-10.55<br>FIXED.<br>MOBILE.<br>Radiolocation.                                                                              | 10.50-10.55<br>FIXED.<br>MOBILE.<br>RADIOLOCATION.                                                                                                                             |                                                                       | 10.50-10.55<br>RADIOLOCATION.<br><br>US59                                                                                   | 10.50-10.55<br>RADIOLOCATION.<br><br>US59                                                                                   | PRIVATE LAND MOBILE<br>(90).               |                         |
| 10.55-10.60                                                                                                                     | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>Radiolocation.                                                                                                              |                                                                       | 10.55-10.60                                                                                                                 | 10.55-10.60<br>FIXED.                                                                                                       | DOMESTIC PUBLIC<br>FIXED (21).             |                         |
| 10.60-10.68                                                                                                                     | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>Radiolocation.<br>831 832 |                                                                       | 10.60-10.68<br>EARTH-EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br><br>US265 US277                | 10.60-10.68<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>SPACE RESEARCH<br>(passive).<br><br>US265 US277      | DOMESTIC PUBLIC<br>FIXED (21).             |                         |
| 10.68-10.70                                                                                                                     | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>833 834                                                                      |                                                                       | 10.68-10.70<br>EARTH-EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246 | 10.68-10.70<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246 |                                            |                         |
| 10.7-11.7<br>FIXED.<br>FIXED-SATELLITE<br>(space-to Earth).<br>(Earth-to-space)<br>835<br>MOBILE except<br>aeronautical mobile. | 10.7-11.7<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile.                                                                           |                                                                       | 10.7-11.7<br><br><br>US211                                                                                                  | 10.7-11.7<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br><br>US211 NG41 NG104                                         | DOMESTIC PUBLIC<br>FIXED (21).             |                         |
| 11.7-12.5                                                                                                                       | 11.7-12.1                                                                                                                                                                      | 11.7-12.2                                                             | 11.7-12.2                                                                                                                   | 11.7-12.2                                                                                                                   |                                            |                         |



| International table                                                                             |                                                                                                                                                                                       |                                                                                                 | United States table                                                                                                                    |                                                                                                                                    | FCC use designators                                                                                                                                     |                         |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz                                                                      | Region 2—allocation<br>GHz                                                                                                                                                            | Region 3—allocation<br>GHz                                                                      | Government<br>Allocation GHz                                                                                                           | Non-Government<br>Allocation GHz                                                                                                   | Rule part(s)                                                                                                                                            | Special-use frequencies |
| (1)                                                                                             | (2)                                                                                                                                                                                   | (3)                                                                                             | (4)                                                                                                                                    | (5)                                                                                                                                | (6)                                                                                                                                                     | (7)                     |
| FIXED.<br>BROADCASTING.<br>BROADCASTING-<br>SATELLITE.<br>Mobile except<br>aeronautical mobile. | FIXED 837<br>FIXED-SATELLITE<br>(space-to-Earth).<br>Mobile except<br>aeronautical mobile.<br>836 839 840                                                                             | FIXED.<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING.<br>BROADCASTING-<br>SATELLITE. |                                                                                                                                        | FIXED.SATELLITE<br>(space-to-Earth).<br>Mobile except<br>aeronautical mobile.                                                      | DOMESTIC PUBLIC<br>FIXED (21).<br>SATELLITE<br>COMMUNICATION<br>(25).                                                                                   |                         |
| 838 840                                                                                         | 12.1-12.3<br>FIXED 837<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING.<br>BROADCASTING-<br>SATELLITE.<br>839 840 841<br>842 843 844 | 838 840                                                                                         | 839 840                                                                                                                                | 839 840<br>NG143 NG145                                                                                                             |                                                                                                                                                         |                         |
|                                                                                                 | 12.2-12.5<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>BROADCASTING.                                                                                                         |                                                                                                 | 12.2-12.7                                                                                                                              | 12.2-12.7<br>FIXED.<br>BROADCASTING-<br>SATELLITE.                                                                                 | INTERNATIONAL<br>PUBLIC (23).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).<br>DIRECT BROADCAST<br>SATELLITE SERVICE<br>(100).                     |                         |
|                                                                                                 | 12.3-12.7<br>FIXED.<br>MOBILE except<br>aeronautical mobile.                                                                                                                          | 838 840 845                                                                                     |                                                                                                                                        |                                                                                                                                    |                                                                                                                                                         |                         |
| 12.5-12.75                                                                                      | BROADCASTING.<br>BROADCASTING-<br>SATELLITE.<br>839 840 843<br>844 846                                                                                                                | 12.5-12.75                                                                                      | 839 840<br>843 844                                                                                                                     | 839 840<br>843 844<br>NG139                                                                                                        |                                                                                                                                                         |                         |
| FIXED-SATELLITE<br>(space-to-Earth)<br>(Earth-to-space).                                        | 12.7-12.75<br>FIXED.<br>FIXED-SATELLITE.<br>MOBILE except<br>aeronautical mobile.                                                                                                     | BROADCASTING-<br>SATELLITE 847                                                                  | 12.7-12.75                                                                                                                             | 12.7-12.75<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.                                                            | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).                                   |                         |
| 840 848<br>849 850                                                                              | 840                                                                                                                                                                                   | 840                                                                                             | 840                                                                                                                                    | 840 NG53 NG118                                                                                                                     |                                                                                                                                                         |                         |
| 12.75-13-25                                                                                     | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE<br>Space Research (deep<br>space ) (space-to-<br>Earth).                                                                     |                                                                                                 | 12.75-13.25<br><br>US251                                                                                                               | 12.75-13.25<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br><br>US251 NG53<br>NG104 NG118                          | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 13.25-13.40                                                                                     | AERONAUTICAL<br>RADIONAVIGATION<br>851<br>852 853                                                                                                                                     |                                                                                                 | 13.25-13.40<br>AERONAUTICAL<br>RADIONAVIGATION<br>851<br>Space Research<br>(Earth-to-space)                                            | 13.25-13.40<br>AERONAUTICAL<br>RADIONAVIGATION<br>851<br>Space Research<br>(Earth-to-space).                                       | AVIATION (87).                                                                                                                                          |                         |
| 13.4-14.0                                                                                       | RADIOLOCATION.<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space).<br>Space Research.<br>713 853 854 855                                                          |                                                                                                 | 13.4-14.0<br>RADIOLOCATION.<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space).<br>Space Research<br>713 US110 G59 | 13.4-14.0<br>Radiolocation.<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space).<br>Space Research<br>713 US110 | PRIVATE LAND MOBILE<br>(90).                                                                                                                            |                         |
| 14.00-14.25                                                                                     |                                                                                                                                                                                       |                                                                                                 | 14.0-14.2                                                                                                                              | 14.0-14.2                                                                                                                          |                                                                                                                                                         |                         |



| International table                                                                                                                          |                                                                                                                                           |                                                                                                                                              | United States table                                                                                                                                                                                         |                                                                                                                             | FCC use designators                                                          |                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz                                                                                                                   | Region 2—allocation<br>GHz                                                                                                                | Region 3—allocation<br>GHz                                                                                                                   | Government<br>Allocation GHz                                                                                                                                                                                | Non-Government<br>Allocation GHz                                                                                            | Rule part(s)                                                                 | Special-use frequencies |
| (1)                                                                                                                                          | (2)                                                                                                                                       | (3)                                                                                                                                          | (4)                                                                                                                                                                                                         | (5)                                                                                                                         | (6)                                                                          | (7)                     |
|                                                                                                                                              | FIXED-SATELLITE<br>(Earth-to-space) 858<br>RADIONAVIGATION<br>856<br>Space Research.                                                      |                                                                                                                                              | RADIONAVIGATION.<br>Space Research.<br><br>US287 292                                                                                                                                                        | FIXED-SATELLITE<br>(Earth-to-space).<br>RADIONAVIGATION.<br>Space Research.<br><br>US287 US292                              | Aviation (87).<br>Maritime (81 & 83).<br>SATELLITE<br>COMMUNICATION<br>(25). |                         |
|                                                                                                                                              | 857 859                                                                                                                                   |                                                                                                                                              | 14.2-14.3                                                                                                                                                                                                   | 14.2-14.3<br>FIXED-SATELLITE<br>(Earth-to-space).                                                                           | SATELLITE<br>COMMUNICATION<br>(25).                                          |                         |
| 4.25-14.30                                                                                                                                   |                                                                                                                                           |                                                                                                                                              | US287                                                                                                                                                                                                       | US287                                                                                                                       |                                                                              |                         |
|                                                                                                                                              | FIXED-SATELLITE<br>(Earth-to-space) 858<br>RADIONAVIGATION<br>856<br>Space Research.<br>857 859 860 861                                   |                                                                                                                                              |                                                                                                                                                                                                             |                                                                                                                             |                                                                              |                         |
| 14.3-14.4<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 858<br>MOBILE except<br>aeronautical mobile.<br>Radionavigation-Satellite.<br>859 | 14.3-14.4<br>FIXED-SATELLITE<br>(Earth-to-space) 858<br>Radionavigation-Satellite.<br>859                                                 | 14.3-14.4<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 858<br>MOBILE except<br>aeronautical mobile.<br>Radionavigation-Satellite.<br>859 | 14.3-14.4<br><br>US287                                                                                                                                                                                      | 14.3-14.4<br>FIXED-SATELLITE<br>(Earth-to-space).<br><br>US287                                                              | SATELLITE<br>COMMUNICATION<br>(25).                                          |                         |
| 14.40-14.47                                                                                                                                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 858<br>MOBILE except<br>aeronautical mobile.<br>Space Research (space-<br>to-Earth).<br>859 |                                                                                                                                              | 14.4-14.5<br>Fixed.<br>Mobile.<br><br>862 US203<br>US234 US287                                                                                                                                              | 14.4-14.5<br>FIXED-SATELLITE<br>(Earth-to-space).<br><br>862 US203<br>US234 US287                                           | SATELLITE<br>COMMUNICATION<br>(25).                                          |                         |
| 14.47-14.50                                                                                                                                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 858<br>MOBILE except<br>aeronautical mobile.<br>Radio Astronomy.<br>859 862                 |                                                                                                                                              |                                                                                                                                                                                                             |                                                                                                                             |                                                                              |                         |
| 14.5-14.8                                                                                                                                    | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 863<br>MOBILE.<br>Space Research.                                                           |                                                                                                                                              | 14.5000-14.7145<br>FIXED.<br>Mobile.<br>Space Research.<br><br>14.7145-15.1365<br>MOBILE<br>Fixed.<br><br>Space Research.<br>G119<br><br>15.1365-15.35<br>FIXED.<br>Mobile.<br>Space Research.<br>720 US211 | 14.50-15.35<br><br><br><br><br><br><br>720 US211                                                                            |                                                                              |                         |
| 14.80-15.35                                                                                                                                  | FIXED.<br>MOBILE.<br><br>Space Research.<br><br>720                                                                                       |                                                                                                                                              |                                                                                                                                                                                                             |                                                                                                                             |                                                                              |                         |
| 15.35-15.40                                                                                                                                  | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>864 865                                 |                                                                                                                                              | 15.35-15.40<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246                                                                                 | 15.35-15.40<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246 |                                                                              |                         |
| 15.4-15.7                                                                                                                                    | AERONAUTICAL<br>RADIONAVIGATION.<br><br>733 797                                                                                           |                                                                                                                                              | 15.4-15.7<br>AERONAUTICAL<br>RADIONAVIGATION.<br>733 797<br>US211 US260                                                                                                                                     | 15.4-15.7<br>AERONAUTICAL<br>RADIONAVIGATION.<br>733 797<br>US211 US260                                                     | AVIATION (87).                                                               |                         |
| 15.7-16.6                                                                                                                                    | RADIOLOCATION.                                                                                                                            |                                                                                                                                              | 15.7-16.6<br>RADIOLOCATION.                                                                                                                                                                                 | 15.7-17.2<br>Radiolocation.                                                                                                 | Private Land Mobile (90).                                                    |                         |



| International table                                                                                                                                                                          |                                                                                                                                                                                              |                                                                                                                                                                                              | United States table                                                                                               |                                                                                                                                                                                                   | FCC use designators                                                                                                                                     |                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz                                                                                                                                                                   | Region 2—allocation<br>GHz                                                                                                                                                                   | Region 3—allocation<br>GHz                                                                                                                                                                   | Government<br>Allocation GHz                                                                                      | Non-Government<br>Allocation GHz                                                                                                                                                                  | Rule part(s)                                                                                                                                            | Special-use frequencies |
| (1)                                                                                                                                                                                          | (2)                                                                                                                                                                                          | (3)                                                                                                                                                                                          | (4)                                                                                                               | (5)                                                                                                                                                                                               | (6)                                                                                                                                                     | (7)                     |
|                                                                                                                                                                                              | 866 867                                                                                                                                                                                      |                                                                                                                                                                                              | US110 G59                                                                                                         |                                                                                                                                                                                                   |                                                                                                                                                         |                         |
| 16.6-17.1                                                                                                                                                                                    | RADIOLOCATION.<br>Space Research (deep<br>space) (Earth-to-<br>space).<br>866 867                                                                                                            |                                                                                                                                                                                              | 16.6-17.1<br>RADIOLOCATION.<br>Space Research (deep<br>space) (Earth-to-<br>space).<br>US110 G59                  | US110                                                                                                                                                                                             |                                                                                                                                                         |                         |
| 17.1-17.2                                                                                                                                                                                    | RADIOLOCATION.<br>866 867                                                                                                                                                                    |                                                                                                                                                                                              | 17.1-17.2<br>RADIOLOCATION.<br>US110 G59                                                                          |                                                                                                                                                                                                   |                                                                                                                                                         |                         |
| 17.2-17.3                                                                                                                                                                                    | RADIOLOCATION.<br>Earth Exploration-<br>Satellite (active).<br>Space Research (active).<br>866 867                                                                                           |                                                                                                                                                                                              | 17.2-17.3<br>RADIOLOCATION.<br>Earth Exploration-<br>Satellite (active).<br>Space Research (active).<br>US110 G59 | 17.2-17.3<br>Radiolocation.<br>Earth Exploration-<br>Satellite (active).<br>Space Research (active).<br>US110                                                                                     | Private Land Mobile (90).                                                                                                                               |                         |
| 17.3-17.7                                                                                                                                                                                    | FIXED-SATELLITE<br>(Earth-to-space) 869<br>Radiolocation.<br>866                                                                                                                             |                                                                                                                                                                                              | 17.3-17.7<br>Radiolocation.<br><br>US259 US271 G59                                                                | 17.3-17.7<br>FIXED-SATELLITE<br>(Earth-to-space).<br><br>US259 US271 NG140                                                                                                                        |                                                                                                                                                         |                         |
| 17.7-18.1                                                                                                                                                                                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth)<br>(Earth-to-space) 869<br>MOBILE.                                                                                                             |                                                                                                                                                                                              | 17.7-17.8<br><br><br>US271                                                                                        | 17.7-17.8<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth)<br>(Earth-to-space).<br>MOBILE.<br><br>US271 NG140 NG144                                                                               | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 18.1-18.6                                                                                                                                                                                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                                                                    |                                                                                                                                                                                              | 17.8-18.6<br><br>870                                                                                              | 17.8-18.6<br><br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br><br>870 NG144                                                                                                       | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 18.6-18.8<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth) 872<br>MOBILE except<br>aeronautical mobile.<br>Earth Exploration-<br>Satellite (passive).<br>Space Research<br>(passive).<br>871 | 18.6-18.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth) 872<br>MOBILE except<br>aeronautical mobile.<br>SPACE RESEARCH<br>(passive).<br>871 | 18.6-18.8<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth) 872<br>MOBILE except<br>aeronautical mobile.<br>Earth-Exploration-<br>Satellite (passive).<br>Space Research<br>(passive).<br>871 | 18.6-18.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br><br>US254 US255        | 18.6-18.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE except<br>aeronautical mobile.<br>SPACE RESEARCH<br>(passive).<br>US254 US255 | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 18.8-19.7                                                                                                                                                                                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                                                                    |                                                                                                                                                                                              | 18.8-19.7                                                                                                         | 18.8-19.7<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                                                            | AUXILIARY<br>BROADCASTING (74).<br>CABLE TELEVISION<br>RELAY (78).<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 19.7-20.2                                                                                                                                                                                    | FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>873                                                                                                         |                                                                                                                                                                                              | 19.7-20.2                                                                                                         | 19.7-20.2<br>FIXED SATELLITE<br>(space-to-Earth).<br>Mobile-Satellite (space-<br>to-Earth).                                                                                                       |                                                                                                                                                         |                         |
| 20.2-21.2                                                                                                                                                                                    |                                                                                                                                                                                              |                                                                                                                                                                                              | 20.2-21.2                                                                                                         | 20.2-21.2                                                                                                                                                                                         |                                                                                                                                                         |                         |



| International table                                             |                                                                                                                                                              |                            | United States table                                                                                                                                                           |                                                                                                                                                                               | FCC use designators                                                                            |                         |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz                                      | Region 2—allocation<br>GHz                                                                                                                                   | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                                                                                  | Non-Government<br>Allocation GHz                                                                                                                                              | Rule part(s)                                                                                   | Special-use frequencies |
|                                                                 | (2)                                                                                                                                                          | (3)                        | (4)                                                                                                                                                                           | (5)                                                                                                                                                                           | (6)                                                                                            | (7)                     |
|                                                                 | FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>873 |                            | FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>G117                 | Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).                                                                                                          |                                                                                                |                         |
| 21.2-21.4                                                       | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).                                                              |                            | 21.2-21.4<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263                                                         | 21.2-21.4<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263                                                         | 21.2-21.4<br>DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                         |
| 21.4-22.0                                                       | FIXED.<br>MOBILE.                                                                                                                                            |                            | 21.4-22.0<br>FIXED.<br>MOBILE.                                                                                                                                                | 21.4-22.0<br>FIXED.<br>MOBILE.                                                                                                                                                | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 22.00-22.21                                                     | FIXED.<br>MOBILE except<br>aeronautical mobile.<br><br>874                                                                                                   |                            | 22.00-22.21<br>FIXED.<br>MOBILE except aero-<br>nautical mobile.<br><br>874                                                                                                   | 22.00-22.21<br>FIXED.<br>MOBILE except aero-<br>nautical mobile.<br><br>874                                                                                                   | DOMESTIC PUBLIC<br>MOBILE (22).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).             |                         |
| 22.21-22.50                                                     | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>875 876 |                            | 22.21-22.50<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>875 US263 | 22.21-22.50<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>875 US263 | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 22.50-22.55<br>FIXED.<br>MOBILE.                                | 22.50-22.55<br>BROADCASTING-<br>SATELLITE 877<br>FIXED.<br>MOBILE.<br><br>878                                                                                |                            | 22.50-22.55<br>FIXED.<br>MOBILE.<br><br>US211                                                                                                                                 | 22.50-22.55<br>BROADCASTING-<br>SATELLITE.<br>FIXED.<br>MOBILE.<br><br>US211                                                                                                  | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 22.55-23.00<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br><br>879 | 22.55-23.00<br>BROADCASTING-<br>SATELLITE 877<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br>878 879                                                            |                            | 22.55-23.00<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br><br>879 US278                                                                                                         | 22.55-23.00<br>BROADCASTING-<br>SATELLITE.<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br>879 US278                                                                              | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 23.00-23.55                                                     | FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br><br>879                                                                                                             |                            | 23.00-23.55<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br><br>879 US278                                                                                                         | 23.00-23.55<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE.<br><br>879 US278                                                                                                         | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 23.55-23.60                                                     | FIXED.<br>MOBILE.                                                                                                                                            |                            | 23.55-23.60<br>FIXED.<br>MOBILE.                                                                                                                                              | 23.55-23.60<br>FIXED.<br>MOBILE.                                                                                                                                              | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).              |                         |
| 23.6-24.0                                                       | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>880                                                        |                            | 23.6-24.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246                                                     | 23.6-24.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246                                                     |                                                                                                |                         |
| 24.00-24.05                                                     | AMATEUR.<br>AMATEUR-SATELLITE.<br>881                                                                                                                        |                            | 24.00-24.05<br><br>881 US211                                                                                                                                                  | 24.00-24.05<br>AMATEUR.<br>AMATEUR-SATELLITE.<br>881 US211                                                                                                                    | AMATEUR (97).                                                                                  |                         |



| International table                                                                                                                                                       |                                                                                                                                                              |                                                                                                                                                                       | United States table                                                                                                                                                        |                                                                                                                                              | FCC use designators                                                               |                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Region 1—allocation<br>GHz                                                                                                                                                | Region 2—allocation<br>GHz                                                                                                                                   | Region 3—allocation<br>GHz                                                                                                                                            | Government<br>Allocation GHz                                                                                                                                               | Non-Government<br>Allocation GHz                                                                                                             | Rule part(s)                                                                      | Special-use frequencies                                               |
|                                                                                                                                                                           | (2)                                                                                                                                                          | (3)                                                                                                                                                                   | (4)                                                                                                                                                                        | (5)                                                                                                                                          | (6)                                                                               | (7)                                                                   |
| 24.05-24.25                                                                                                                                                               | RADIOLOCATION.<br>Amateur.<br>Earth Exploration-<br>Satellite (active).<br>881                                                                               |                                                                                                                                                                       | 24.05-24.25<br>RADIOLOCATION.<br>Earth Exploration-<br>Satellite (active).<br>881 US110 G59                                                                                | 24.05-24.25<br>Amateur.<br>Radiolocation.<br>Earth Exploration-<br>Satellite (active).<br>881 US110                                          | Amateur (97).<br>Private Land Mobile (90).                                        | 24.125 ± 125 GHz:<br>Industrial, scientific<br>and medical frequency. |
| 24.25-25.25                                                                                                                                                               | RADIONAVIGATION.                                                                                                                                             |                                                                                                                                                                       | 24.25-25.25<br>RADIONAVIGATION.                                                                                                                                            | 24.24-25.25<br>RADIONAVIGATION.                                                                                                              | AVIATION (87).                                                                    |                                                                       |
| 25.25-27.00                                                                                                                                                               | FIXED.<br>MOBILE.<br>Earth Exploration-<br>Satellite (space-to-<br>space).<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space).           |                                                                                                                                                                       | 25.25-27.00<br>FIXED.<br>MOBILE.<br>Earth Exploration-<br>Satellite (space-to-<br>space).<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space).          | 25.25-27.00<br>Earth Exploration-<br>Satellite (space-to-<br>space).<br>Standard Frequency and<br>Time Signal-Satellite<br>(Earth-to-space). |                                                                                   |                                                                       |
| 27.0-27.5<br>FIXED.<br>MOBILE.<br>Earth Exploration-<br>Satellite (space-to-<br>space).                                                                                   | 27.0-27.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>Earth Exploration-<br>Satellite (space-to-<br>space).                              |                                                                                                                                                                       | 27.0-27.5<br>FIXED.<br>MOBILE.<br>Earth-Exploration-<br>Satellite (space-to-<br>space).                                                                                    | 27.0-27.5<br>Earth Exploration<br>Satellite (space-to-<br>space).                                                                            |                                                                                   |                                                                       |
| 27.5-29.5                                                                                                                                                                 | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.                                                                                                    |                                                                                                                                                                       | 27.5-29.5                                                                                                                                                                  | 27.5-29.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.                                                                       | DOMESTIC PUBLIC<br>FIXED (21).                                                    |                                                                       |
| 29.5-30.0                                                                                                                                                                 | FIXED-SATELLITE<br>(Earth-to-space).<br>Mobile-Satellite (Earth-to-<br>space).<br>882 883                                                                    |                                                                                                                                                                       | 29.5-30.0<br>882                                                                                                                                                           | 29.5-30.0<br>FIXED-SATELLITE<br>(Earth-to-space).<br>Mobile-Satellite (Earth-to-<br>space).<br>882                                           |                                                                                   |                                                                       |
| 30.0-31.0                                                                                                                                                                 | FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>883 |                                                                                                                                                                       | 30.0-31.0<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>G117 | 30.0-31.0<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).                                                            |                                                                                   |                                                                       |
| 31.0-31.3                                                                                                                                                                 | FIXED.<br>MOBILE.<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>Space Research 884.<br>885 886                                  |                                                                                                                                                                       | 31.0-31.3<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>886 US211                                                                             | 31.0-31.3<br>FIXED.<br>MOBILE.<br>Standard Frequency and<br>Time Signal-Satellite<br>(space-to-Earth).<br>886 US211                          | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94). |                                                                       |
| 31.3-31.5                                                                                                                                                                 | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>887                                                        |                                                                                                                                                                       | 31.3-31.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).                                                                | 31.3-31.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).                                  |                                                                                   |                                                                       |
| 31.5-31.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>Fixed.<br>Mobile except<br>aeronautical mobile.<br>888 889 | 31.5-31.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>888                                           | 31.5-31.8<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>Fixed.<br>Mobile except<br>aeronautical mobile.<br>888 | US74 US246                                                                                                                                                                 | US74 US246                                                                                                                                   |                                                                                   |                                                                       |
| 31.8-32.0                                                                                                                                                                 | RADIONAVIGATION.<br>Space Research.<br>890 891 892                                                                                                           |                                                                                                                                                                       | 31.8-32.0<br>RADIONAVIGATION.<br>US69 US211 US262                                                                                                                          | 31.8-32.0<br>RADIONAVIGATION.<br>US69 US211 US262                                                                                            |                                                                                   |                                                                       |
| 32.0-32.3                                                                                                                                                                 |                                                                                                                                                              |                                                                                                                                                                       | 32.0-33.0                                                                                                                                                                  | 32.0-33.0                                                                                                                                    |                                                                                   |                                                                       |



| International table        |                                                                                                        |                            | United States table                                                                                                       |                                                                                                                              | FCC use designators                                                                                                  |                         |
|----------------------------|--------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                             | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                              | Non-Government<br>Allocation GHz                                                                                             | Rule part(s)                                                                                                         | Special-use frequencies |
| (1)                        | (2)                                                                                                    | (3)                        | (4)                                                                                                                       | (5)                                                                                                                          | (6)                                                                                                                  | (7)                     |
|                            | INTER-SATELLITE<br>RADIONAVIGATION.<br>Space Research.<br>890 891 892 893                              |                            | INTER-SATELLITE<br>RADIONAVIGATION.                                                                                       | INTER-SATELLITE<br>RADIONAVIGATION.                                                                                          |                                                                                                                      |                         |
| 32.3-33.0                  | INTER-SATELLITE<br>RADIONAVIGATION.<br>892 893                                                         |                            | 893 US69 US262<br>US278                                                                                                   | 893 US69 US262<br>US278                                                                                                      |                                                                                                                      |                         |
| 33.0-33.4                  | RADIONAVIGATION.<br>892                                                                                |                            | 33.0-33.4<br>RADIONAVIGATION.<br>US69                                                                                     | 33.0-33.4<br>RADIONAVIGATION.<br>US69                                                                                        |                                                                                                                      |                         |
| 33.4-34.2                  | RADIOLOCATION.<br>892 894                                                                              |                            | 33.4-36.0<br>RADIOLOCATION.<br>897 US110 US252<br>G34                                                                     | 33.4-36.0<br>Radiolocation.<br>897 US110 US252                                                                               | Private Land Mobile (90).                                                                                            |                         |
| 34.2-35.2                  | RADIOLOCATION.<br>Space Research 895<br>896<br>894                                                     |                            |                                                                                                                           |                                                                                                                              |                                                                                                                      |                         |
| 35.2-36.0                  | METEOROLOGICAL<br>AIDS.<br>RADIOLOCATION.<br>894 897                                                   |                            |                                                                                                                           |                                                                                                                              |                                                                                                                      |                         |
| 36.0-37.0                  | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>898 |                            | 36.0-37.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>898 US263 | 36.0-37.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>898 US263    |                                                                                                                      |                         |
| 37.0-37.5                  | FIXED.<br>MOBILE.<br><br>899                                                                           |                            | 37.0-38.6<br>FIXED.<br>MOBILE.                                                                                            | 37.0-38.6<br>FIXED.<br>MOBILE.                                                                                               | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).                                    |                         |
| 37.5-39.5                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                              |                            |                                                                                                                           |                                                                                                                              |                                                                                                                      |                         |
|                            | 899                                                                                                    |                            | 38.6-39.5<br><br>US291                                                                                                    | 38.6-39.5<br>FIXED.<br>MOBILE.<br>FIXED-SATELLITE<br>(space-to-Earth).<br><br>US291                                          | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (90).<br>Auxiliary Broadcasting<br>(74). |                         |
| 39.5-40.5                  | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>MOBILE-SATELLITE<br>(space-to-Earth).     |                            | 39.5-40.0<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br><br>US291 G117              | 39.5-40.0<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>MOBILE-SATELLITE<br>(space-to-Earth).<br><br>US291 | DOMESTIC PUBLIC<br>FIXED (21).<br>PRIVATE<br>OPERATIONAL-FIXED<br>MICROWAVE (94).<br>Auxiliary Broadcasting<br>(74). |                         |
|                            |                                                                                                        |                            | 40.0-40.5<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).<br>G117.                       | 40.0-40.5<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE-SATELLITE<br>(space-to-Earth).                                   |                                                                                                                      |                         |
| 40.5-42.5                  |                                                                                                        |                            | 40.5-42.5                                                                                                                 | 40.5-42.5                                                                                                                    |                                                                                                                      |                         |



| International table        |                                                                                                                                |                            | United States table                                                                                                                            |                                                                                                                                                | FCC use designators |                         |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                                                     | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                                                   | Non-Government<br>Allocation GHz                                                                                                               | Rule part(s)        | Special-use frequencies |
| (1)                        | (2)                                                                                                                            | (3)                        | (4)                                                                                                                                            | (5)                                                                                                                                            | (6)                 | (7)                     |
|                            | BROADCASTING-<br>SATELLITE<br>/BROADCASTING/<br>Fixed.<br>Mobile.                                                              |                            | US211                                                                                                                                          | BROADCASTING-<br>SATELLITE<br>/BROADCASTING/<br>Fixed.<br>Mobile.<br>US211                                                                     |                     |                         |
| 42.5-43.5                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 901<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>900          |                            | 42.5-43.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>900                | 42.5-43.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE except<br>aeronautical mobile.<br>RADIO ASTRONOMY.<br>900                |                     |                         |
| 43.5-47.0                  | MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903                                   |                            | 43.5-45.5<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE-SATELLITE<br>(Earth-to-space).<br><br>G117                                         | 43.5-45.5                                                                                                                                      |                     |                         |
|                            |                                                                                                                                |                            | 45.5-47.0<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903                     | 45.5-47.0<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903                     |                     |                         |
| 47.0-47.2                  | AMATEUR.<br>AMATEUR-SATELLITE.                                                                                                 |                            | 47.0-47.2                                                                                                                                      | 47.0-47.2<br>AMATEUR.<br>AMATEUR-SATELLITE.                                                                                                    | AMATEUR (97).       |                         |
| 47.2-50.2                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space) 901.<br>MOBILE 905.<br>904                                                       |                            | 47.2-50.2<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>904 US264 US297                                                      | 47.2-50.2<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>904 US264 US297                                                      |                     |                         |
| 50.2-50.4                  | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).                                |                            | 50.2-50.4<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263                          | 50.2-50.4<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263                          |                     |                         |
| 50.4-51.4                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE<br>Mobile-Satellite (Earth-to-<br>space).                             |                            | 50.4-51.4<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>G117                        | 50.4-51.4<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).                                |                     |                         |
| 51.4-54.25                 | EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br><br>906 907                                      |                            | 51.4-54.25<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                          | 51.4-54.25<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                          |                     |                         |
| 54.25-58.2                 | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>908 |                            | 54.25-58.2<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>US263 | 54.25-58.2<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>US263 |                     |                         |
| 58.2-59.0                  | EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br><br>906 907                                      |                            | 58.2-59.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                           | 58.2-59.0<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                           |                     |                         |



| International table        |                                                                                                           |                            | United States table                                                                                                   |                                                                                                                       | FCC use designators |                                                                              |
|----------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                                | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                          | Non-Government<br>Allocation GHz                                                                                      | Rule part(s)        | Special-use frequencies                                                      |
| (1)                        | (2)                                                                                                       | (3)                        | (4)                                                                                                                   | (5)                                                                                                                   | (6)                 | (7)                                                                          |
| 59-64                      | FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910<br>911                                      |                            | 59-64<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910<br>911                                         | 59-64<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910<br>911                                         |                     | 61.25 GHz $\pm$ 250 MHz:<br>Industrial, scientific<br>and medical frequency. |
| 64-65                      | EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>906 907                     |                            | 64-65<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246      | 64-65<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246      |                     |                                                                              |
| 65-66                      | EARTH EXPLORATION-<br>SATELLITE.<br>SPACE RESEARCH.<br>Fixed.<br>Mobile.                                  |                            | 65-66<br>EARTH EXPLORATION-<br>SATELLITE.<br>SPACE RESEARCH.<br>Fixed.<br>Mobile.                                     | 65-66<br>EARTH EXPLORATION-<br>SATELLITE.<br>SPACE RESEARCH.<br>Fixed.<br>Mobile.                                     |                     |                                                                              |
| 66-71                      | MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903              |                            | 66-71<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903                 | 66-71<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903                 |                     |                                                                              |
| 71-74                      | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>906 |                            | 71-74<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>US270  | 71-74<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>MOBILE-SATELLITE<br>(Earth-to-space).<br>US270  |                     |                                                                              |
| 74.0-75.5                  | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.                                                 |                            | 74.0-75.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>US297                                       | 74.0-75.5<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>US297                                       |                     |                                                                              |
| 75.5-76.0                  | AMATEUR.<br>AMATEUR-SATELLITE.                                                                            |                            | 75.5-76.0                                                                                                             | 75.5-76.0<br>AMATEUR.<br>AMATEUR-SATELLITE.                                                                           | AMATEUR (97).       |                                                                              |
| 76-81                      | RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>912                                                   |                            | 76-81<br>RADIOLOCATION.<br>912                                                                                        | 76-81<br>RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>912                                                      | Amateur (97).       |                                                                              |
| 81-84                      | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>MOBILE-SATELLITE<br>(space-to-Earth).        |                            | 81-84<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>MOBILE-SATELLITE<br>(space-to-Earth).           | 81-84<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>MOBILE-SATELLITE<br>(space-to-Earth).           |                     |                                                                              |
| 84-86                      | FIXED.<br>MOBILE.<br>BROADCASTING.<br>BROADCASTING-<br>SATELLITE.<br>913                                  |                            | 84-86<br>FIXED.<br>MOBILE.<br>913 US211                                                                               | 84-86<br>FIXED.<br>MOBILE.<br>BROADCASTING.<br>BROADCASTING-<br>SATELLITE.<br>913 US211                               |                     |                                                                              |
| 86-92                      | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>907     |                            | 86-92<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246 | 86-92<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US74 US246 |                     |                                                                              |
| 92-95                      | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIOLOCATION.<br>914                        |                            | 92-95<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIOLOCATION.<br>914                           | 92-95<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIOLOCATION.<br>914                           |                     |                                                                              |



| International table        |                                                                                                                                                |                            | United States table                                                                                                                                             |                                                                                                                                                                 | FCC use designators |                                                                   |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                                                                     | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                                                                    | Non-Government<br>Allocation GHz                                                                                                                                | Rule part(s)        | Special-use frequencies                                           |
| (1)                        | (2)                                                                                                                                            | (3)                        | (4)                                                                                                                                                             | (5)                                                                                                                                                             | (6)                 | (7)                                                               |
| 95-100                     | MOBILE 902.<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 904                            |                            | 95-100<br>MOBILE 902.<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 904                                   | 95-100<br>MOBILE 902.<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 904                                   |                     |                                                                   |
| 100-102                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>722                                         |                            | 100-102<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>722 US246                                                              | 100-102<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>722 US246                                                              |                     |                                                                   |
| 102-105                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>722                                                                                          |                            | 102-105<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>722 US211                                                                                          | 102-105<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>722                                                                                                |                     |                                                                   |
| 105-116                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 907                                      |                            | 105-116<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 US74 US246                                     | 105-116<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 US74 US246                                     |                     |                                                                   |
| 116-126                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br><br>722 915 916                                      |                            | 116-126<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>SPACE RESEARCH<br>(passive).<br>722 915 916 US211<br>US263 | 116-126<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>SPACE RESEARCH<br>(passive).<br>722 915 916 US211<br>US263 |                     | 122.5 ± 5 GHz.<br>Industrial scientific and<br>medical frequency. |
| 126-134                    | FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910                                                                                  |                            | 126-134<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910                                                                                        | 126-134<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>RADIOLOCATION 910                                                                                        |                     |                                                                   |
| 134-142                    | MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 917 918                         |                            | 134-142<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 917 918                               | 134-142<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>Radiolocation.<br>903 917 918                               |                     |                                                                   |
| 142-144                    | AMATEUR.<br>AMATEUR-SATELLITE.                                                                                                                 |                            | 142-144                                                                                                                                                         | 142-144<br>AMATEUR.<br>AMATEUR-SATELLITE.                                                                                                                       | AMATEUR (97).       |                                                                   |
| 144-149                    | RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>918                                                                                        |                            | 144-149<br>RADIOLOCATION.<br><br>918                                                                                                                            | 144-149<br>RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>918                                                                                              | Amateur (97).       |                                                                   |
| 149-150                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                      |                            | 149-150<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                            | 149-150<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.                                                                                            |                     |                                                                   |
| 150-151                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>919 |                            | 150-151<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>919 US263 | 150-151<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>919 US263 |                     |                                                                   |
| 151-164                    |                                                                                                                                                |                            | 151-164                                                                                                                                                         | 151-164                                                                                                                                                         |                     |                                                                   |



| International table        |                                                                                                                                |                            | United States table                                                                                                                                 |                                                                                                                                                     | FCC use designators |                         |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                                                     | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                                                        | Non-Government<br>Allocation GHz                                                                                                                    | Rule part(s)        | Special-use frequencies |
| (1)                        | (2)                                                                                                                            | (3)                        | (4)                                                                                                                                                 | (5)                                                                                                                                                 | (6)                 | (7)                     |
|                            | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).                                                                                 |                            | FIXED.<br>FIXED-SATELLITE.<br>211                                                                                                                   | FIXED.<br>FIXED-SATELLITE.<br>211                                                                                                                   |                     |                         |
| 164-168                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).                                 |                            | 164-168<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                                  | 164-168<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                                  |                     |                         |
| 168-170                    | FIXED.<br>MOBILE.                                                                                                              |                            | 168-170<br>FIXED.<br>MOBILE.                                                                                                                        | 168-170<br>FIXED.<br>MOBILE.                                                                                                                        |                     |                         |
| 170.0-174.5                | FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>919                                                                               |                            | 170.0-174.5<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>919                                                                                     | 170.0-174.5<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>919                                                                                     |                     |                         |
| 174.5-176.5                | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>919 |                            | 174.5-176.5<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>919 US263 | 174.5-176.5<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909.<br>SPACE RESEARCH<br>(passive).<br>919 US263 |                     |                         |
| 176.5-182.0                | FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919                                                                                |                            | 176.5-182.0<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919 US211                                                                                | 176.5-182.0<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919 US211                                                                                |                     |                         |
| 182-185                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>920 921                      |                            | 182-185<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                                  | 182-185<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>US246                                  |                     |                         |
| 185-190                    | FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919                                                                                |                            | 185-190<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919 US211                                                                                    | 185-190<br>FIXED.<br>INTER-SATELLITE.<br>MOBILE 909<br>919 US211                                                                                    |                     |                         |
| 190-200                    | MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>722 903                               |                            | 190-200<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>722 903                                         | 190-200<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>722 903                                         |                     |                         |
| 200-202                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>722                         |                            | 200-202<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>722 US263                             | 200-202<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>722 US263                             |                     |                         |
| 202-217                    | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>722                                                               |                            | 202-217<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>722                                                                         | 202-217<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>722                                                                         |                     |                         |
| 217-231                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 807                      |                            | 217-231<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 US74 US246                         | 217-231<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>RADIO ASTRONOMY.<br>SPACE RESEARCH<br>(passive).<br>722 US74 US246                         |                     |                         |
| 231-235                    |                                                                                                                                |                            | 213-235                                                                                                                                             | 231-235                                                                                                                                             |                     |                         |



| International table        |                                                                                                                                         |                            | United States table                                                                                                                                         |                                                                                                                                                             | FCC use designators |                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------|
| Region 1—allocation<br>GHz | Region 2—allocation<br>GHz                                                                                                              | Region 3—allocation<br>GHz | Government<br>Allocation GHz                                                                                                                                | Non-Government<br>Allocation GHz                                                                                                                            | Rule part(s)        | Special-use frequencies                                         |
| (1)                        | (2)                                                                                                                                     | (3)                        | (4)                                                                                                                                                         | (5)                                                                                                                                                         | (6)                 | (7)                                                             |
|                            | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.                                                             |                            | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.<br>US211                                                                        | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.<br>US211                                                                        |                     |                                                                 |
| 235-238                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive). |                            | 235-238<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263 | 235-238<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>SPACE RESEARCH<br>(passive).<br>US263 |                     |                                                                 |
| 238-241                    | FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.                                                             |                            | 238-241<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.                                                                      | 238-241<br>FIXED.<br>FIXED-SATELLITE<br>(space-to-Earth).<br>MOBILE.<br>Radiolocation.                                                                      |                     |                                                                 |
| 241-248                    | RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>922                                                                                 |                            | 241-248<br>RADIOLOCATION.<br>922                                                                                                                            | 241-248<br>RADIOLOCATION.<br>Amateur.<br>Amateur-Satellite.<br>922                                                                                          | Amateur (97).       | 245 ± 1 GHz: Industrial<br>scientific and medical<br>frequency. |
| 248-250                    | AMATEUR.<br>AMATEUR-SATELLITE.                                                                                                          |                            | 248-250                                                                                                                                                     | 248-250<br>AMATEUR.<br>AMATEUR-SATELLITE                                                                                                                    | AMATEUR (97).       |                                                                 |
| 250-252                    | EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>923                                                       |                            | 250-252<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>923                                                                | 250-252<br>EARTH EXPLORATION-<br>SATELLITE (passive).<br>SPACE RESEARCH<br>(passive).<br>923                                                                |                     |                                                                 |
| 252-265                    | MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903 923 924 925                                |                            | 252-265<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903 923 924 US211                                       | 252-265<br>MOBILE 902<br>MOBILE-SATELLITE.<br>RADIONAVIGATION.<br>RADIONAVIGATION-<br>SATELLITE.<br>903 923 924 US211                                       |                     |                                                                 |
| 265-275                    | FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIO ASTRONOMY.<br>926                                                    |                            | 265-275<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIO ASTRONOMY.<br>926                                                             | 265-275<br>FIXED.<br>FIXED-SATELLITE<br>(Earth-to-space).<br>MOBILE.<br>RADIO ASTRONOMY.<br>926                                                             |                     |                                                                 |
| 275-400                    | (Not allocated)                                                                                                                         |                            | 275-300<br>FIXED.<br>MOBILE.<br>927                                                                                                                         | 275-300<br>FIXED.<br>MOBILE.<br>927                                                                                                                         |                     |                                                                 |
|                            | 927                                                                                                                                     |                            | Above 300.<br>(Not allocated).<br>927                                                                                                                       | Above 300.<br>(Not allocated).<br>927                                                                                                                       | Amateur (97).       |                                                                 |

#### International Footnotes

444 Administrations authorizing the use of frequencies below 9 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated (see also No. 1816).

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

446 *Additional allocation:* In Bulgaria, Hungary, Poland, the German Democratic

Republic, Czechoslovakia, and the U.S.S.R., the band 14-17 kHz is also allocated to the radionavigation service on a permitted basis.

447 The stations of services to which the bands 14-19.95 kHz and 20.5-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia, and the U.S.S.R., the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions.

448 The use of the bands 14-19.95 kHz, 20.05-70 kHz, 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) and 90-110 kHz by the maritime mobile service is limited to cost radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the bands concerned.

449 *Additional allocation:* In Bulgaria, Hungary, Poland, the German Democratic Republic, Czechoslovakia, and the U.S.S.R.,



the band 67—70 kHz is also allocated to the radionavigation service on a permitted basis.

450 *Different category of service:* In Bangladesh, Iran and Pakistan the allocation of the bands 70—72 kHz and 84—86 kHz to the fixed and maritime mobile services is on a primary basis (see No. 425).

451 The use of the bands 70—90 kHz (70—86 kHz in Region 1) and 110—130 kHz (112—130 kHz in Region 1) by the radionavigation service is limited to continuous wave systems.

452 In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70—90 kHz and 110—130 kHz shall be subject to agreement obtained under the procedure set forth in Article 14 with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service under such agreements.

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

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

455 *Different category of service:* In Bangladesh, Iran and Pakistan, the allocation of the bands 112—117.0 kHz and 126—129 kHz to the fixed and maritime mobile services is on a primary basis (see No. 425).

456 *Different category of service:* In Federal Republic of Germany, the allocation of the band 115—117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. 425) and to the radionavigation service on a secondary basis (see No. 424).

457 *Additional allocation:* In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia, and the U.S.S.R., the band 130—148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

458 In Region 1, the change of the band limits from 150 kHz and 285 kHz to 148.5 kHz and 283.5 kHz respectively shall take place on 1 February 1986 for the lower limit and 1 February 1990 for the upper limit (see Resolution 500).

459 In the Region 2 polar areas (north of 60° N and south of 60° S) which are subject to auroral disturbances, the aeronautical fixed service is the primary service in the band 160—190 kHz.

460 *Alternative allocation:* In Angola, Botswana, Burundi, the Congo, Malawi, Rwanda, South Africa and Zaire, the band

160—200 kHz is allocated to the fixed service on a primary basis.

461 *Additional allocation:* In Somalia, the band 200—255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.

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

463 *Different category of service:* In Sudan and Yemen (P.D.R. of), the allocation of the band 255—283.5 kHz to the aeronautical radionavigation service is on a primary basis (see No. 425).

464 *Alternative allocation:* In Tunisia, the band 255—283.5 kHz is allocated to the broadcasting service on a primary basis.

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

466 In the band 285—325 kHz (283.5—325 kHz in Region 1), in the maritime radionavigation service, radiobeacon stations may also transmit supplementary navigational information using narrow-band techniques, on condition that the prime function of the beacon is not significantly degraded.

467 *Different category of service:* In the U.S.S.R., and the Black Sea areas of Bulgaria, Roumania and Turkey, the allocation of the band 315—325 kHz to the maritime radionavigation service is on a primary basis (see No. 425) under the following conditions:

(a) In the Black Sea and White Sea areas, the maritime radionavigation service is the primary service and the aeronautical radionavigation service is the permitted service;

(b) In the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

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

469 *Additional allocation:* In Afghanistan, Australia, China, the Overseas French Territories of Region 3, India, Japan and Papua New Guinea, the band 415—495 kHz is also allocated to the aeronautical radionavigation service on a permitted basis.

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

471 The bands 490—495 kHz and 505—510 kHz shall be subject to the provisions of No. 3018 until the provisions of Recommendation 200 have been implemented.

472 The frequency 500 kHz is the international distress and calling frequency

for radiotelegraphy. The conditions for its use are prescribed in Article 38.

473 In Region 1, in the band 505—526.5 kHz, the administrations which operate stations of the aeronautical radionavigation service shall take the technical steps necessary to avoid harmful interference to the maritime mobile service.

474 In the Federal Republic of Germany, Belgium, Spain, France, Iceland, Italy, Norway, the Netherlands, the United Kingdom, Sweden and Yugoslavia, the frequency 518 kHz is used on an experimental basis for the transmission by coast stations of meteorological and navigational warnings to ships, by means of narrowband direct-printing telegraphy.

475 In the band 515.5—526.5 kHz, Austria may continue to operate only those broadcasting stations listed in Additional Protocol III to the Final Acts of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975. This operation is allowed until the entry into force of a revision of the Geneva Plan, 1975, and subject to not causing harmful interference to the maritime mobile and aeronautical radionavigation services.

476 *Additional allocation:* In the United Kingdom, the band 519.5—526.5 kHz is also allocated to the broadcasting service on a secondary basis for the transmission of public utility information.

477 In Region 2, in the band 525—535 kHz the carrier power of broadcasting stations shall not exceed 1 kilowatt during the day and 250 watts at night.

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

479 *Additional allocation:* In China, the band 526.5—535 kHz also allocated to the aeronautical radionavigation service on a secondary basis.

480 In Region 2, the use of the band 1 605—1 705 kHz by stations of the broadcasting service shall be subject to a plan to be established by a regional administrative radio conference (see Recommendation 504).

481 In Region 2, until the dates decided by the regional administrative radio conference referred to in No. 480, the band 1 605—1 705 kHz is allocated to the fixed, mobile and aeronautical radionavigation services on a primary basis and to the radiolocation service on a secondary basis (see Recommendation 504).

482 *Additional allocation:* In Australia, Indonesia, New Zealand, the Philippines, Singapore, Sri Lanka and Thailand, the band 1 606.5—1 705 kHz is also allocated to the broadcasting service on a secondary basis.

483 *Different category of service:* In Bulgaria, Hungary, Mongolia, Nigeria, Poland, the German Democratic Republic, Chad, Czechoslovakia and the U.S.S.R., the allocation of the bands 1 606.5—1 625 kHz, 1 635—1 800 kHz and 2 107—2 160 kHz to the fixed and land mobile services is on a primary basis (see No. 425).



484 Some countries of Region 1 use radiodetermination systems in the bands 1 806.5—1 825 kHz, 1 835—1 850 kHz, 1 850—2 160 kHz, 2 194—2 300 kHz, 2 502—2 850 kHz and 3 500—3 800 kHz. The establishment and operation of such systems are subject to agreement obtained under the procedure set forth in Article 14. The radiated mean power of these stations shall not exceed 50 W.

485 *Additional allocation:* In Angola, Bulgaria, Hungary, Mongolia, Nigeria, Poland, the German Democratic Republic, Chad, Czechoslovakia and the U.S.S.R., the bands 1 825—1 835 kHz, 1 800—1 810 kHz and 2 160—2 170 kHz are also allocated to the fixed and land mobile services on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

486 In Region 1, in the bands 1 825—1 835 kHz, 1 800—1 810 kHz and 2 160—2 170 kHz [except in the countries listed in No. 485 and those listed in No. 499 for the band 2 160—2 170 kHz], existing stations in the fixed and mobile except aeronautical mobile services (and stations of the aeronautical mobile (OR) service in the band 2 160—2 170 kHz) may continue to operate on a primary basis until satisfactory replacement assignments have been found and implemented in accordance with Resolution 38.

487 In Region 1, the establishment and operation of radiolocation stations in the bands 1 825—1 835 kHz, 1 800—1 810 kHz and 2 160—2 170 kHz shall be subject to agreement obtained under the procedure set forth in Article 14 (see also No. 486). The radiated mean power of radiolocation stations shall not exceed 50 W. Pulse systems are prohibited.

488 In the Federal Republic of Germany, Denmark, Finland, Hungary, Ireland, Israel, Jordan, Malta, Norway, Poland, the German Democratic Republic, the United Kingdom, Sweden, Czechoslovakia and the U.S.S.R., administrations may allocate up to 200 kHz to their amateur service in the band 1 715—1 800 kHz and 1 850—2 000 kHz. However, when allocating the bands within this range to their amateur service, administration 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.

489 In Region 2, Loran stations operating in the band 1 800—2 000 kHz shall cease operation by 31 December 1982. In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825—1 875 kHz and 1 925—1 975 kHz respectively. Other services to which the band 1 800—2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.

490 *Alternative allocation:* In the Federal Republic of Germany, Angola, Austria, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Spain, Ethiopia, France, Greece, Italy, Lebanon, Luxembourg, Malawi, the Netherlands, Portugal, Syria, the German Democratic Republic, Somalia, Tanzania, Tunisia, Turkey and the U.S.S.R., the band 1 810—1 830 kHz is allocated to the fixed and

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

491 *Additional allocations:* In Saudi Arabia, Iraq, Israel, Libya, Poland, Roumania, Chad, Czechoslovakia, Togo and Yugoslavia, the band 1 810—1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

492 In Region 1, the use of the band 1 810—1 850 kHz by the amateur service is subject to the condition that satisfactory replacement assignments have been found and implemented in accordance with Resolution 38, for frequencies to all existing stations of the fixed and mobile, except aeronautical mobile, services operating in this band (except for the stations of the countries listed in Nos. 490, 491 and 493). On completion of satisfactory transfer, the authorization to use the band 1 810—1 830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. 490 and 491 to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. 490 and 491.

493 *Alternative allocations:* In Burundi and Lesotho, the band 1 810—1 850 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

494 *Alternative allocation:* In Argentina, Bolivia, Chile, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 1 850—2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis.

495 In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1 850—2 045 kHz, 2 194—2 498 kHz, 2 502—2 625 kHz and 2 650—2 850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.

496 In Region 1, the use of the band 2 025—2 045 kHz by the meteorological aids service is limited to oceanographic buoy stations.

497 In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065—2 107 kHz shall be limited to class R3E or J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina, Brazil, and Uruguay, the carrier frequency 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072—2 075.5 kHz are used as provided in No. 4245.

498 In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service com ## Saudi Arabia, Botswana, Ethiopia, Iraq, Lesotho, Libya, Malawi, Somalia, Swaziland and Zambia, the band 2 160—2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a

primary basis. The mean power of stations in these services shall not exceed 50 W.

500 The frequency 2 182 kHz is the international distress and calling frequency for radiotelephone. The conditions for the use of the band 2 173.5—2 190.5 kHz are prescribed in Articles 38 and 60.

501 The frequency 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequency 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of  $\pm 3$  kHz about the frequency.

502 *Alternative allocation:* In Belgium, Cyprus, Denmark, Spain, France, Greece, Iceland, Italy, Malta, Norway, the Netherlands, Portugal, the United Kingdom, Singapore, Sri Lanka, Sweden, Turkey and Yugoslavia, the band 2 194—2 300 kHz is allocated to the maritime mobile service on a primary basis and the fixed and land mobile services on a permitted basis.

503 For the conditions for the use of the band 2 300—2 495 kHz (2 498 kHz in Region 1), 3 200—3 400 kHz, 4 750—4 995 kHz and 5 005—5 080 kHz by the broadcasting service, see Nos. 406 to 410, 411 and 2666 to 2673.

504 *Alternative allocation:* In Belgium, Cyprus, Denmark, Spain, France, Greece, Iraq, Italy, Malta, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Turkey and Yugoslavia, the band 2 502—2 625 kHz is allocated to the maritime mobile service on a primary basis and to the fixed and land mobile services on a permitted basis.

505 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Nos. 2980 and 2984 respectively, by stations of the maritime mobile service engaged in coordinated search and rescue operations.

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

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

507 *Alternative allocation:* In Belgium, Cameroon, Cyprus, Ivory Coast, Denmark, Egypt, Spain, France, Greece, Iceland, Italy, Liberia, Malta, Norway, the Netherlands, the United Kingdom, Singapore, Sri Lanka, Sweden, Togo, Turkey and Yugoslavia, the band 3 155—3 200 kHz is allocated to the maritime mobile service on a primary basis and to the fixed and land mobile services on a permitted basis.

508 *Additional allocation:* In Australia, Brazil, Canada, the United States, Japan, Mexico, New Zealand, Peru and Uruguay, the band 3 230—3 400 kHz is also allocated to the radiolocation service on a secondary basis.



509 *Additional allocation:* In Honduras, Mexico, Peru and Venezuela, the band 3 500—3 750 kHz is also allocated to the fixed and mobile services on a primary basis.

510 For the use of these bands allocated to the amateur service at 3.5 MHz, 7.0 MHz, 10.1 MHz, 14.0 MHz, 18.068 MHz, 21.0 MHz, 24.89 MHz and 144 MHz in the event of natural disasters, see Resolution 640.

511 *Additional allocation:* In Brazil, the band 3 700—4 000 kHz is also allocated to the radiolocation service on a primary basis.

512 *Alternative allocation:* In Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3 750—4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

513 *Alternative allocation:* In Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 3 900—3 950 kHz is allocated to the broadcasting service on a primary basis. The use of this band by the broadcasting service is subject to agreement obtained under the procedure set forth in Article 14 with neighbouring countries having services operating in accordance with the Table.

514 *Additional allocation:* In Canada, the band 3 950—4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of broadcasting stations operating in this band shall not exceed that necessary for a national service within the frontier of this country and shall not cause harmful interference to other services operating in accordance with the Table.

515 *Additional allocation:* In Greenland, the band 3 950—4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

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

517 The use of the band 4 000—4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. 4373).

518 In Afghanistan, Argentina, Australia, Botswana, China, India, Swaziland, Chad and the U.S.S.R., in the bands 4 063—4 123 kHz, 4 130—4 133 kHz and 4 408—4 438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service.

519 On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4 063—4 123 kHz and 4 130—4 438 kHz may be used exceptionally by stations in the fixed service communicating only within the boundary of the country in which they are located with a mean power not exceeding 50 W.

520 For the use of the carrier frequency 4 125 kHz in the zone of Regions 1 and 2 south of latitude 15° N., including Mexico, and in the zone of Region 3 south of latitude 25° N., see No. 2982.

521 *Different category of service:* In the U.S.S.R., the allocation of band 5 130—5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 425).

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

523 For the use of the carrier frequency 6 215.5 kHz in the zone of Region 3 south of latitude 25° N., see No. 2986.

524 The band 6 765—6 795 kHz (centre frequency 6 780 kHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant CCIR Recommendations.

525 *Different category of service:* In Mongolia and the U.S.S.R., the allocation of the band 6 765—7 000 kHz to the land mobile service is on a primary basis.

526 *Additional allocation:* In Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000—7 050 kHz is also allocated to the fixed service on a primary basis.

527 *Alternative allocation:* In Egypt, Ethiopia, Guinea, Libya, Madagascar, Malawi and Tanzania, the band 7 000—7 050 kHz is allocated to the fixed service on a primary basis.

528 The use of the band 7 100—7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3.

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

530 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775—9 900 kHz, 11 650—11 700 kHz and 11 975—12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station not using a total radiated power exceeding 24 dBW.

531 The bands 9 775—9 900 kHz, 11 650—11 700 kHz, 11 975—12 050 kHz, 13 600—13 800 kHz, 15 450—15 600 kHz, 17 550—17 700 kHz and 21 750—21 850 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution 8. The use of these bands by the broadcasting service shall be subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution 508). Within these bands, the date of commencement of operations in the

broadcasting service on a planned channel shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution 8, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations on that channel.

532 The bands 12 230—12 330 kHz, 16 360—16 460 kHz, 17 360—17 410 kHz, 18 780—18 900 kHz, 19 680—19 800 kHz and 22 720—22 840 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution 8. The use of these bands by the maritime mobile service shall be subject to provisions to be decided by a competent world administrative radio conference. The date of commencement of operations in the maritime mobile service on a frequency in accordance with the above-mentioned provisions shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution 8, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by maritime mobile operations on that frequency.

533 In making assignments to stations of other services to which the band 13 360—13 410 kHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

534 The band 13 553—13 567 kHz (centre frequency 13 560 kHz) is designed for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

535 *Additional allocation:* In Afghanistan, China, the Ivory Coast, Iran and the U.S.S.R., the band 14 250—14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed services shall not use a radiated power exceeding 24 dBW.

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

537 The band 18 068—18 168 kHz is allocated to the fixed service on primary basis subject to the procedure described in Resolution 8. The use of this band by the amateur and amateur-satellite service shall be subject to the completion of satisfactory transfer of all assignments to stations in the fixed service operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution 8.

538 *Additional allocation:* In the U.S.S.R., the band 18 068—18 168 kHz is also allocated to the fixed service on a primary basis for use



within the boundary of the U.S.S.R., with a peak envelope power not exceeding 1 kW.

539 *Alternative allocation:* In Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the band 21 850—21 870 kHz is allocated to the aeronautical fixed and the aeronautical mobile (R) services on a primary basis.

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

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

542 *Additional allocation:* In Kenya, the band 23 600—24 900 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

543 The band 24 890—24 900 kHz is allocated to the fixed and land mobile services on a primary basis subject to the procedure described in Resolution 8. The use of this band by the amateur and amateur-satellite services shall be subject to the completion of the satisfactory transfer of all assignments to fixed and land mobile stations operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution 8.

544 The bands 25 110—25 210 kHz and 26 100—26 175 kHz are also allocated to the fixed and land mobile services on a primary basis subject to the procedure described in Resolution 8. The use of these bands on an exclusive basis by the maritime mobile service shall be subject to provisions to be decided by a competent world administrative radio conference. The date of commencement of operations in maritime mobile service on a frequency in accordance with the above-mentioned provisions shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution 8, of all assignments to stations in the fixed and land mobile services operating in accordance with the Table and other provisions of the Radio Regulations recorded in the Master Register and which may be affected by such maritime mobile operations on that frequency.

545 The band 25 500—25 600 kHz is allocated to the fixed and mobile, except aeronautical mobile, service on a primary basis subject to the procedure described in Resolution 8. The use of the band by the radio astronomy service shall be subject to the completion of the satisfactory transfer of all assignments to stations in the fixed and mobile, except aeronautical mobile, services operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution 8. The band 25 600—25 670 kHz is allocated to the broadcasting service on a primary basis, subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution 508). After completion of all the above-mentioned provisions, all emissions capable of causing harmful interference to the radio astronomy service in the band 25 550—25 670 kHz shall be avoided. The use of passive sensors by other services will also be authorized.

546 The band 26 957—27 283 kHz (center frequency 27 120 kHz) is designated for

industrial, scientific and medical (ISM) applications. Radiocommunication service operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

547 In making assignments to stations of other services to which the band 37.5—38.25 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

548 The band 40.66—40.70 MHz (centre frequency 40.68 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

549 *Additional allocation:* In Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe and band 41—44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

550 *Additional allocation:* In Iran and Japan, the band 41—44 MHz is also allocated to the radiolocation service on a secondary basis.

551 *Additional allocation:* In France and Monaco, the band 41—47 MHz is also allocated to the broadcasting service on a primary basis until 1 January 1986 and, in the United Kingdom, until 1 January 1987.

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

553 *Additional allocation:* In Hungary, Kenya, Mongolia, Czechoslovakia and the U.S.S.R., the bands 47—48.5 and 56.5—58 MHz are also allocated to the fixed and land mobile services on a secondary basis.

554 *Additional allocation:* In Albania, the Federal Republic of Germany, Austria, Belgium, Bulgaria, Denmark, Finland, France, Gabon, Greece, Italy, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Morocco, Nigeria, Norway, the Netherlands, Poland, the German Democratic Republic, the United Kingdom, Senegal, Sweden, Switzerland, Tunisia, Turkey and Yugoslavia, the band 47—68 MHz, and in Romania, the band 47—58 MHz, are also allocated to the land mobile service on a permitted basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band.

555 *Additional allocation:* In Angola, Cameroon, Congo, Madagascar, Mozambique, Somalia, Sudan, Tanzania, Chad and Yemen (P.D.R.), the band 47—68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a permitted basis.

556 *Alternative allocation:* In New Zealand, the band 50—51 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis; the band 53—54 MHz is allocated to the fixed and mobile services on a primary basis.

557 *Alternative allocation:* In Afghanistan, Bangladesh, Brunei, India, Indonesia, Iran, Malaysia, Pakistan, Singapore and Thailand, the band 50—54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis.

558 *Additional allocation:* In Australia, China and the Democratic People's Republic of Korea, the band 50—54 MHz is also allocated to the broadcasting service on a primary basis.

559 *Additional allocation:* In Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe, the band 50—54 MHz is also allocated to the amateur service on a primary basis.

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

561 *Additional allocation:* In Botswana, Burundi, Lesotho, Malawi, Mali, Namibia, Rwanda, South Africa, Swaziland, Zaire, Zambia and Zimbabwe, the band 54—68 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

562 Different category of service: In the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 54—68 MHz to the fixed and mobile services is on a primary basis (see No. 425).

563 Different category of service: In Cuba, the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 68—72 MHz to the fixed and mobile services is on a primary basis (see No. 425).

564 *Additional allocation:* In Bulgaria, Hungary, Poland, Roumania and Czechoslovakia, the band 68—73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference, Geneva, 1960.

565 *Additional allocation:* In Mongolia and the U.S.S.R., the bands 68—73 MHz and 76—87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in Mongolia and the U.S.S.R., are subject to agreements with the neighboring countries concerned.

566 *Additional allocation:* In Australia, China, the Republic of Korea, the Philippines, the Democratic People's Republic of Korea and Western Samoa, the band 68—74 MHz is also allocated to the broadcasting service on a primary basis.

567 *Additional allocation:* In Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the band 73—74 MHz is also allocated to the broadcasting service on a primary basis. The use of this band by the broadcasting service in Bulgaria, Hungary, Mongolia, Poland, Czechoslovakia and the



U.S.S.R., is subject to agreement obtained under the procedure set forth in Article 14.

568 In making assignments to stations of other services to which the band 73—74.6 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

569 In Region 2, the fixed, mobile and broadcasting services previously authorized in the band 73—74.6 MHz may continue to operate on a non-interference basis to the radio astronomy service until 31 December 1985.

570 *Additional allocation:* In Columbia, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Guyana, Honduras and Nicaragua, the band 73—74.6 MHz is also allocated to the fixed and mobile services on a secondary basis.

571 *Additional allocation:* In Bulgaria, China, Hungary, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the bands 74.6—74.8 and 75.2—75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only.

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

Until 31 December 1989, administrations in Regions 2 and 3 should refrain from assigning frequencies to other services in the bands 74.6—74.8 MHz and 75.2—75.4 MHz.

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

573 *Additional allocation:* In Western Samoa, the band 75.4—87 MHz is also allocated to the broadcasting service on a primary basis.

574 *Additional allocation:* In China, the Republic of Korea, Japan, the Philippines and the Democratic People's Republic of Korea, the band 76—87 MHz is also allocated to the broadcasting service on a primary basis.

575 *Additional allocation:* In Bulgaria, Hungary, Poland, Roumania and Czechoslovakia, the band 76—87.5 MHz is also allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference, Geneva, 1960.

576 *Different category of service:* In the United States, the French Overseas Departments in Region 2, Guyana, Jamaica, Mexico and Paraguay the allocation of the band 76—88 MHz to the fixed and mobile services is on a primary basis (see No. 425).

577 In Region 3 (except in the Republic of Korea, India, Japan, Malaysia, the Philippines, Singapore and Thailand) the band 79.75—80.25 MHz is also allocated to

the radio astronomy service on a primary basis. In making assignments to stations of other services, administrations are urged to take all practicable steps in the band to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

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

579 *Additional allocation:* In Afghanistan and Australia the band 85—87 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service in these countries is subject to special agreements between the administrations concerned.

580 *Additional allocation:* In New Zealand, the band 87—88 MHz is allocated to the land mobile service on a primary basis.

581 *Additional allocation:* In the Federal Republic of Germany, Spain, France, Ireland, Italy, Liechtenstein, Monaco, the United Kingdom, Switzerland and Yemen (P.D.R. of), the band 87.5—88 MHz is also allocated to the land mobile service on a permitted basis and subject to agreement obtained under the procedure set forth in Article 14.

582 *Additional allocation:* In the United Kingdom the band 97.6—102.1 MHz is also allocated to the land mobile service on a permitted basis until 31 December 1989. The use of this band by the land mobile service is restricted to those stations in operation on 1 January 1980. The withdrawal of land mobile stations will be arranged in consultation with the administrations concerned.

583 In Region 1, existing systems in the fixed and mobile, except aeronautical mobile (R), services may continue to use the band 100—104 MHz on a primary basis until the date of entry into force of the new regional broadcasting agreement referred to in Resolution 510 or 1 January 1985, whichever is the earlier date.

584 Broadcasting stations in the band 100—108 MHz in Region 1 shall be established and operated in accordance with an agreement and associated plan for the band 87.5—108 MHz to be drawn up by a regional broadcasting conference (see Resolution 510). Prior to the date of entry into force of this agreement, broadcasting stations may be introduced subject to agreement between administrations concerned, on the understanding that such an operation shall in no case prejudice the establishment of the plan.

585 *Additional allocation:* In China, the Republic of Korea, the Philippines and Singapore, the band 100—108 MHz is also allocated to the fixed and mobile services on a permitted basis.

586 *Alternative allocation:* In New Zealand the band 100—108 MHz is allocated to the land mobile service on a primary basis and to the broadcasting service on a secondary basis.

587 *Additional allocation:* In Austria, Bulgaria, Hungary, Israel Kenya, Mongolia,

Poland, Syria, the German Democratic Republic, the United Kingdom, Somalia, Czechoslovakia and the U.S.S.R., the band 104—108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a permitted basis until 31 December 1995 and, thereafter, on a secondary basis.

588 *Additional allocation:* In Finland and Yugoslavia, the band 104—108 MHz is also allocated to the fixed service on a permitted basis, until 31 December 1995. The effective radiated power of any station shall not exceed 25 W.

589 *Additional allocation:* In France, Roumania, Sweden, Turkey and Yugoslavia, the band 104—108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a permitted basis until 31 December 1995.

590 *Additional allocation:* In Italy, the band 104—108 MHz is also allocated to the land mobile service on a primary basis until the date of entry into force of the new regional broadcasting agreement referred to in Resolution 510 or 1 January 1985 which ever is the earlier date.

591 Subject to agreement obtained under the procedure set forth in article 14, the band 117.975—137 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis and on the condition that harmful interference is not caused to the aeronautical mobile (R) service.

592 The bands 121.45—121.55 MHz and 242.95—243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radiobeacons transmitting at 121.5 MHz and 243 MHz.

593 In the band 117.975—136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and where required the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies for safety purposes with stations of the aeronautical mobile service.

594 *Additional allocation:* In Angola, Bulgaria, Hungary, Iran, Iraq, Japan, Mongolia, Mozambique, Papua New Guinea, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 132—136 MHz is also allocated to the aeronautical mobile (RO) service on a permitted basis.

595 Until 1 January 1990, the band 136—137 MHz is also allocated to the space operation service (space-to-Earth), meteorological-satellite service (space-to-Earth) and the space research service (space-to-Earth) on a primary basis. The introduction of stations of the aeronautical mobile (R) service shall only occur after that date and shall be effected in accordance with internationally agreed plans for that service. After 1 January 1990, the band 136—137 MHz will also be allocated to the above-mentioned space radiocommunication services on a secondary basis (see Recommendation 404).

596 *Different category of service:* In Afghanistan, Saudi Arabia, Bahrain, Brunei, China, the United Arab Emirates, India, Indonesia, Iran, Iraq, Kuwait, Malaysia, Oman, Pakistan, Qatar, Singapore, Thailand,



Yemen A.R. and Yemen (P.D.R. of), the allocation of the band 137—138 MHz to the fixed and mobile, except aeronautical mobile (R), services is on a primary basis (see No. 425).

597 *Different category of service:* In Israel, Jordan and Syria, the allocation of the band 137—138 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 425).

598 *Different category of service:* In Austria, Bulgaria, Egypt, Finland, Greece, Hungary, Lebanon, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R. and Yugoslavia, the allocation of the band 137—138 MHz to the aeronautical mobile (OR) service is on a primary basis.

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

600 *Additional allocation:* In the Federal Republic of Germany, Austria, Belgium, France, Israel, Italy, Liechtenstein, Luxembourg, the United Kingdom, Sweden, Switzerland and Czechoslovakia, the bands 138—143.6 MHz and 143.65—144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis.

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

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

603 *Additional allocation:* In China, the band 138—144 MHz is also allocated to the radiolocation service on a primary basis.

604 *Additional allocation:* In Ethiopia, Finland, Kenya, Malta, Somalia, Sudan, Tanzania, Yemen A.R. and Yugoslavia, the band 138—144 MHz is also allocated to the fixed service on a primary basis.

605 *Additional allocation:* In Singapore, the band 144—145 MHz is also allocated to the fixed and mobile services on a primary basis. Such use is limited to systems in operation on or before 1 January 1980, which in any case shall cease by 31 December 1995.

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

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

608 Subject to agreement obtained under the procedure set forth in Article 14, the band 148—149.9 MHz may be used by the space operation service (Earth-to-space). The bandwidth of an individual transmission shall not exceed  $\pm 25$  kHz.

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

610 In making assignments to stations of other services to which the band 150.05—153 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

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

612 *Additional allocation:* In Sweden and Switzerland the band 150.05—153 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.

613 The Frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article 38.

In the bands 156—156.7625 MHz, 156.8375—157.45 MHz, 160.6—160.975 MHz and 161.475—162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by that administration (see Article 60).

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

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

614 *Alternative allocation:* In France and Monaco, the band 162—174 MHz is allocated to the broadcasting service on a primary basis until 1 January 1985.

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

616 *Additional allocation:* In China, the band 163—167 MHz is also allocated to the space operation service (space-to-Earth) on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

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

618 *Additional allocation:* In Japan, the band 170—174 MHz is also allocated to the broadcasting service on a primary basis.

619 *Additional allocation:* In China, the band 174—184 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under the procedure set forth in Article 14. These services shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.

620 *Different category of service:* In Mexico, the allocation of the band 174—216 MHz to the fixed and mobile services is on a primary basis (see No. 425).

621 *Additional allocation:* In Austria, the Federal Republic of Germany, Belgium, Denmark, Finland, France, Italy, Liechtenstein, Monaco, Norway, the Netherlands, the United Kingdom, Sweden, Switzerland and Yemen (P.D.R. of) the band 174—223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

622 *Different category of service:* In Austria, the Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland and Yemen (P.D.R. of), the band 223—230 MHz is allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

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

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

625 *Additional allocation:* In Australia and Papua New Guinea, the bands 204—208 MHz and 222—223 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

626 *Additional allocation:* In China, India and Thailand, the band 216—223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

627 In Region 2, the band 216—225 MHz is also allocated to the radiolocation service on



a primary basis until 1 January 1990. On and after 1 January 1990, no new stations in that service may be authorized. Stations authorized prior to 1 January 1990 may continue to operate in a secondary basis.

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

629 *Additional allocation:* In Oman, the United Kingdom and Turkey, the band 216—235 MHz is also allocated to the radiolocation service on a secondary basis.

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

631 *Different category of service:* In Spain and Portugal, the band 223—230 MHz is allocated to the fixed service on a permitted basis (see No. 425). Stations of this service shall not cause harmful interference to, or claim protection from, broadcasting stations of other countries, whether existing or planned, that operate in accordance with the Table.

632 *Additional allocation:* In Saudi Arabia, Bahrain, the United Arab Emirates, Israel, Jordan, Oman, Qatar and Syria, the band 223—235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis.

633 *Additional allocation:* In Spain and Portugal, the band 223—235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis until 1 January 1990, subject to or not causing harmful interference to existing or planned broadcasting stations in other countries.

634 *Additional allocation:* In Sweden, the band 223—235 MHz is also allocated to the aeronautical radionavigation service on a permitted basis, until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14, and on condition that no harmful interference is caused to existing and planned broadcasting stations in other countries.

635 *Alternative allocation:* In Botswana, Lesotho, Namibia, South Africa, Swaziland and Zambia, the bands 223—238 MHz and 246—254 MHz are allocated to the broadcasting service on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

636 *Alternative allocation:* In New Zealand, Western Samoa, Niue and Cook Islands, the band 225—230 MHz is allocated to the fixed, mobile and aeronautical radionavigation services on a primary basis.

637 *Additional allocation:* In China, the band 225—235 MHz is also allocated to the radio astronomy service on a secondary basis.

638 *Additional allocation:* In Nigeria, the band 230—235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to agreement obtained under the procedure set forth in Article 14.

639 *Additional allocation:* In Yugoslavia, the band 230—235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, until 1 January 1995. The use

of this band by the aeronautical radionavigation service in Yugoslavia is restricted to the stations in operation by 1 January 1980.

640 *Additional allocation:* In New Zealand, the band 235—239.5 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

641 Subject to agreement obtained under the procedure set forth in Article 14, the bands 235—322 MHz and 335.4—399.9 MHz may be used by the mobile-satellite service, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table.

642 The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes.

643 Subject to agreement obtained under the procedure set forth in Article 14, the band 267—272 MHz may be used by administrations for space telemetry in their countries on a primary basis.

644 In making assignments to stations of other services to which the band 322—328.6 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

645 Limited to Instrument Landing Systems (glide path).

646 Emissions shall be confined in a band of  $\pm 25$  kHz about the standard frequency 400.1 MHz.

647 *Additional allocation:* In Afghanistan, Saudi Arabia, Austria, Bahrain, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Indonesia, Iran, Iraq, Israel, Kuwait, Liberia, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Poland, Qatar, Syria, the German Democratic Republic, Rumania, Singapore, Somalia, Sri Lanka, Czechoslovakia, Thailand, the U.S.S.R. and Yugoslavia, the band 400.05—401 MHz is also allocated to the fixed and mobile services on a primary basis.

648 *Additional allocation:* In Canada, the bands 405.5—406 MHz and 406.1—410 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite, service (Earth-to-space), on a primary basis, subject to agreement obtained under the procedure set forth in Article 14.

649 The band 406—406.1 MHz is reserved solely for the use and development of low-power (not to exceed 5 W) emergency position-indicating radiobeacon (EPIRB) system using space techniques.

650 In making assignments to stations of other services to which the band 406.1—410 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

651 *Different category of service:* In Australia, the United States, India, Japan and

the United Kingdom, the allocation of the bands 420—430 MHz and 440—450 MHz to the radiolocation service is on a primary basis (see No. 425).

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

653 *Additional allocation:* In China, India, the German Democratic Republic, the United Kingdom and the U.S.S.R., the band 420—460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

654 *Different category of service:* In France, the allocation of the band 430—434 MHz to the amateur service is on a secondary basis (see No. 424).

655 *Different category of service:* In Denmark, Libya, Norway and Sweden, the allocation of the bands 430—432 MHz and 438—440 MHz to the radiolocation service on a secondary basis (see No. 424).

656 *Alternative allocation:* In Denmark, Norway and Sweden, the bands 430—432 MHz and 438—440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

657 *Additional allocation:* In Finland, Libya and Yugoslavia, the bands 430—432 MHz and 438—440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

658 *Additional allocation:* In Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei, Burundi, Egypt, the United Arab Emirates, Ecuador, Ethiopia, Greece, Guinea, India, Indonesia, Iran, Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Liechtenstein, Libya, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Switzerland, Tanzania, Thailand and Togo, the band 430—440 MHz is also allocated to the fixed service on a primary basis and the bands 430—435 MHz and 438—440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis.

659 *Additional allocation:* In Angola, Bulgaria, Cameroon, Congo, Gabon, Hungary, Mali, Mongolia, Niger, Poland, the German Democratic Republic, Rumania, Rwanda, Chad, Czechoslovakia and the U.S.S.R., the band 430—440 MHz is also allocated to the fixed service on a primary basis.

660 *Different category of service:* In Argentina, Colombia, Costa Rica, Cuba, Honduras, Panama and Venezuela, the allocation of the band 430—440 MHz to the amateur service is on a primary basis (see No. 425).

661 In Region 1, except in the countries mentioned in No. 662, the band 433.05—434.79 MHz (centre frequency 433.92 MHz) is designated for industrial scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunications services might be affected. In applying this provision,



administrations shall have due regard to the latest relevant CCIR Recommendations.

662 In the Federal Republic of Germany, Austria, Liechtenstein, Portugal, Switzerland and Yugoslavia, the band 433.05—434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

663 *Additional allocation:* In Brazil, France and the French Overseas Departments in Region 2, and India, the band 433.75—434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14. After 1 January 1990, the band 433.75—434.25 MHz will be allocated in the same countries to the same service on a secondary basis.

664 In the bands 435—438 MHz, 1 260—1 270 MHz, 2 400—2 450 MHz, 3 400—3 410 MHz (in Regions 2 and 3 only) and 5 650—5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. 435). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. 2741. The use of the bands 1 260—1 270 MHz and 5 650—5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

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

666 *Additional allocation:* In Canada, New Zealand and Papua New Guinea, the band 440—450 MHz is also allocated to the amateur service on a secondary basis.

667 *Different category of service:* In Canada, the allocation of the band 440—450 MHz to the radiolocation service is on a primary basis (see No. 425).

668 Subject to agreement obtained under the procedure set forth in Article 14, the band 449.75—450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space).

669 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. 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 Appendix 20.

670 In the territorial waters of Canada, 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 Appendix 20.

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

672 *Different category of service:* In Afghanistan, Bulgaria, China, Cuba, Hungary, Japan, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the allocation of the band 460—470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. 425) and is subject to agreement obtained under the procedure set forth in Article 14.

673 *Additional allocation:* In China, the band 470—485 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under the procedure set forth in Article 14, subject to not causing harmful interference to existing and planned broadcasting stations.

674 *Different category of service:* In Mexico and Venezuela, the allocation of the band 470—512 MHz to the fixed and mobile services is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

675 *Different category of service:* In Chile, Colombia, Ecuador, the United States, Guyana and Jamaica, the allocation of the bands 470—512 MHz and 614—806 MHz to the fixed and mobile services is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

676 *Additional allocation:* In Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Libya, Senegal, Sudan, Syria, and Yemen (P.D.R. of), the band 470—582 MHz is also allocated to the fixed service on a secondary basis.

677 *Alternative allocation:* In Pakistan, the bands 470—582 MHz and 610—890 MHz are allocated to the broadcasting service on a primary basis.

678 *Additional allocation:* In Costa Rica, El Salvador, Ecuador, the United States, Guatemala, Guyana, Honduras, Jamaica and Venezuela, the band 512—608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under the procedure set forth in Article 14.

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

680 *Additional allocation:* In the United Kingdom, the following bands are also allocated to the aeronautical radionavigation service on a primary basis: 582—590 MHz until 31 December 1987; 598—606 MHz until 31 December 1994. All new assignments to stations in the aeronautical radionavigation service in these bands are subject to the agreement of the administrations of the following countries: the Federal Republic of Germany, Belgium, Denmark, Spain, France, Ireland, Luxembourg, Morocco, Norway and the Netherlands.

681 *Additional allocation:* In Belgium, the band 582—606 MHz is also allocated to the

radionavigation service on a primary basis until 31 December 1984.

682 *Additional allocation:* In France and Italy, the band 582—606 MHz is also allocated to the radionavigation service on a permitted basis until 1 January 1990.

683 *Additional allocation:* In Oman, the band 582—606 MHz is also allocated to the radionavigation service on a secondary basis.

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

685 *Additional allocation:* In Denmark and Kuwait, the band 590—598 MHz is also allocated to the aeronautical radionavigation service on a primary basis until 1 January 1995.

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

687 *Additional allocation:* In the African Broadcasting Area (see Nos. 400 to 403), the band 606—614 MHz is also allocated to the radio astronomy service on a permitted basis.

688 *Additional allocation:* In China, the band 606—614 MHz is also allocated to the radio astronomy service on a primary basis.

689 In Region 1, except in the African Broadcasting Area (see Nos. 400 to 403), and in Region 3, the band 608—614 MHz is also allocated to the radio astronomy service on a secondary basis. In making assignments to stations or other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

690 *Additional allocation:* In India, the band 608—614 MHz is also allocated to the radio astronomy service on a primary basis.

691 *Additional allocation:* In New Zealand, the band 610—620 MHz is also allocated to the amateur service on a secondary basis.

692 *Different category of service:* In Costa Rica, El Salvador and Honduras, the allocation of the band 614—806 MHz to the fixed service is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

693 Within the frequency band 620—790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions 33 and 507). Such stations shall not produce a power flux-density in excess of the value



—129 dB(W/m<sup>2</sup>) for angles of arrival less than 20° (see Recommendation 705) within the territories of other countries without the consent of the administrations of those countries.

**694 Additional allocation:** In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 645—862 MHz is also allocated to the aeronautical radionavigation service on a permitted basis.

**695 Alternative allocation:** In Spain and France, the band 790—830 MHz is allocated to the broadcasting service on a primary basis.

**696 Alternative allocation:** In Greece, Italy, Morocco and Tunisia, the band 790—838 MHz is allocated to the broadcasting service on a primary basis.

**697 Additional allocation:** In the Federal Republic of Germany, Denmark, Finland, Israel, Liechtenstein, Norway, the Netherlands, Sweden, Switzerland and Yugoslavia, the band 790—830 MHz, and in these same countries and in Spain and France, the band 830—862 MHz are also allocated to the mobile, except aeronautical mobile, service, on a primary basis. However, mobile service stations in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band.

**698 Additional allocation:** In Austria the band 790—862 MHz is also allocated to the mobile, except aeronautical mobile, on a secondary basis.

**699 Additional allocation:** In Norway and Sweden, the bands 806—890 MHz and 942—960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is limited to operation within national boundaries and subject to agreement obtained under the procedure set forth in Article 14. This service shall not cause harmful interference to services operating in accordance with the Table.

**700 Additional allocation:** In Region 2, the band 806—890 MHz is also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is intended for operation within national boundaries and subject to agreement obtained under the procedure set forth in Article 14.

**701 Additional allocation:** In Region 3, the bands 806—890 MHz and 942—960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite service on a primary basis. The use of national boundaries and subject to agreement obtained under the procedure set forth in Article 14. This service shall not cause harmful interference to services operating in accordance with the Table.

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

**703** In Region 1, in the band 862—960 MHz, stations of the broadcasting service

shall be operated only in the African Broadcasting Area (see Nos. 400 to 403) excluding Algeria, Egypt, Libya and Morocco. Such operations shall be in accordance with the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963.

**704 Additional allocation:** In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 862—960 MHz is also allocated to the aeronautical radionavigation service on a permitted basis until 1 January 1998. Up to this date, the aeronautical radionavigation service may use the band, subject to agreement obtained under the procedure set forth in Article 14. After this date, the aeronautical radionavigation service may continue to operate on a secondary basis.

**705 Different category of service:** In the United States, the allocation of the band 890—942 MHz to the radiolocation service is on a primary basis (see No. 425) and subject to agreement obtained under the procedure set forth in Article 14.

**706 Different category of service:** In Australia, the allocation of the band 890—942 MHz to the radiolocation service is on a primary basis (see No. 425).

**707** In Region 2, the band 902—928 MHz (centre frequency 915 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication service operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

**708 Different category of service:** In the United States, the allocation of the bands 942—947 MHz and 952—960 MHz to the mobile service is on a primary basis (see No. 425) and subject to agreement obtained under the procedure set forth in Article 14.

**709** The band 960—1 215 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

**710** Use of the radionavigation-satellite service in the band 1 215—1 260 MHz shall be subject to the condition that no harmful interference is caused to the radionavigation service authorized under footnote 712.

**711 Additional allocation:** In Afghanistan, Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Ethiopia, Guinea, Guyana, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Malawi, Morocco, Mozambique, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Thailand, Togo and Yemen (P.D.R. of), the band 1 215—1 300 MHz is also allocated to the fixed and mobile services on a primary basis.

**712 Additional allocation:** In Algeria, the Federal Republic of Germany, Austria, Bahrain, Belgium, Benin, Burundi, Cameroon, China, Denmark, the United Arab Emirates, France, Greece, India, Iran, Iraq, Kenya, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, Pakistan, the Netherlands, Portugal, Qatar, Senegal, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Tanzania, Turkey and Yugoslavia, the band 1 215—1 300

MHz is also allocated to the radionavigation service on a primary basis.

**713** In the bands 1 215—1 300 MHz, 3 100—3 300 MHz, 5 250—5 350 MHz, 8 550—8 650 MHz, 9 500—9 800 MHz and 13.4—14.0 GHz, radiolocation stations installed on spacecraft may also be employed for the earth exploration-satellite and space research services on a secondary basis.

**714 Additional allocation:** In Canada and the United States the bands 1 240—1 300 MHz and 1 350—1 370 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

**715 Additional allocation:** In Indonesia, the band 1 300—1 350 MHz is also allocated to the fixed and mobile services on a primary basis.

**716 Alternative allocation:** In Ireland and the United Kingdom, the band 1 300—1 350 MHz is allocated to the radiolocation service on a primary basis.

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

**718** In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service from harmful interference in the band 1 330—1 400 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

**719** In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the existing installations of the radionavigation service may continue to operate in the band 1 350—1 400 MHz.

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

**721** All emissions in the band 1 400—1 427 MHz are prohibited.

**722** In the bands 1 400—1 727 MHz, 101—120 GHz and 197—220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extra-terrestrial origin.

**723** In Region 2, in Australia and Papua New Guinea, the use of the band 1 435—1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

**724 Different category of service:** In Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, Egypt, the United Arab Emirates, France, Hungary, Iran, Iraq, Israel, Kuwait, Lebanon, Morocco, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R., Yemen (P.D.R. of) and Yugoslavia, the allocation of the band 1 525—1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 425).



725 *Additional allocation:* In the U.S.S.R., the band 1 525—1 530 MHz is also allocated to the aeronautical mobile service on a primary basis.

726 The allocation to the maritime mobile-satellite service in the band 1 530—1 535 MHz shall be effective from 1 January 1990. Up to that date the allocation to the fixed service shall be on a primary basis in Regions 1 and 3.

727 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Congo, Egypt, the United Arab Emirates, Ethiopia, Iran, Iraq, Israel, Jordan, Pakistan, Qatar, Sudan, Sri Lanka, Syria, Somalia, Chad, Thailand, Togo, Yemen (P.D.R. of) and Zambia, the bands 1 540—1 645.5 and 1 646.5—1 660 MHz are also allocated to the fixed service on a secondary basis.

728 The use of the bands 1 544—1 545 MHz (space-to-Earth) and 1 645.5—1 646.5 MHz (Earth-to-space) by the mobile-satellite service is limited to distress and safety operations.

729 Transmissions in the band 1 545—1 559 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.

730 *Additional allocation:* In the Federal Republic of Germany, Austria, Bulgaria, Cameroon, Guinea, Hungary, Indonesia, Libya, Mali, Mongolia, Nigeria, Poland, the German Democratic Republic, Roumania, Senegal, Czechoslovakia and the U.S.S.R., the bands 1 550—1 645.5 and 1 646.5—1 660 MHz are also allocated to the fixed service on a primary basis.

731 *Alternative allocation:* In Sweden, the band 1 590—1 610 MHz is allocated to the aeronautical radionavigation service on a primary basis.

732 The band 1610—1626.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities. Such satellite use is subject to agreement obtained under the procedure set forth in Article 14.

733 The band 1 610—1 626.5 MHz, 5 000—5 250 MHz and 15.4—15.7 GHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis. Such use is subject to agreement obtained under the procedure set forth in Article 14.

734 The band 1 610.6—1 613.8 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

735 Transmissions in the band 1 646.5—1 660.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.

736 In making assignments to stations of other services to which the band 1 660—1 670 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

737 *Different category of service:* In Afghanistan, Saudi Arabia, Bahrain, Benin, Bulgaria, Cameroon, the Central African Republic, the Congo, Cuba, Egypt, the United Arab Emirates, Ethiopia, Hungary, India, Indonesia, Pakistan, Poland, Qatar, Syria, the German Democratic Republic, Singapore, Somalia, Sri Lanka, Chad, Thailand, Czechoslovakia, Tunisia, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of) and Yugoslavia, the allocation of the band 1 660.5—1 668.4 MHz to the fixed and the mobile, except aeronautical mobile, services is on a primary basis until 1 January 1990.

738 *Additional allocation:* In Bangladesh, India, Indonesia, Nigeria, Pakistan, Sri Lanka and Thailand, the band 1 660.5—1 668.4 MHz is also allocated to the meteorological aids service on a secondary basis.

739 In view of the successful detection by radio astronomers of two hydroxyl spectral lines in the region of 1 665 MHz and 1 667 MHz, administrations are urged to give all practicable protection in the band 1 660.5—1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4—1 668.4 MHz as soon as practicable.

740 *Additional allocation:* In Afghanistan, Costa Rica, Cuba, India, Iran, Malaysia, Pakistan, Singapore, Sri Lanka and Thailand, the band 1 690—1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

741 *Different category of service:* In Saudia Arabia, Austria, Bahrain, Bulgaria, the Congo, Egypt, the United Arab Emirates, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Mauritania, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Somalia, Tanzania, Czechoslovakia, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of) band 1 690—1 700 MHz to the fixed and mobile, except aeronautical mobile, service is on a primary basis (see No. 425).

742 *Additional allocation:* In Australia and Indonesia, the band 1 690—1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

743 *Additional allocation:* In India, Indonesia, Japan and Thailand, the band 1 700—1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis.

744 The band 1 718.8—1 722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations

can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

745 Subject to agreement obtained under the procedure set forth in Article 14 and having particular regard to tropospheric scatter systems, the band 1 750—1 850 MHz may also be used for space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Afghanistan, Australia, India, Indonesia, Japan and Thailand.

746 *Additional allocation:* In Bulgaria, Cuba, Hungary, Mali, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 1 770—1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under the procedure set forth in Article 14.

747 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 025—2 110 MHz may also be used for Earth-to-space and space-to-space transmissions in the space research, space operation and earth exploration-satellite services. The services using space-to-space transmissions shall operate in accordance with the provisions of Nos. 2557 to 2560 and shall not cause harmful interference to the other space services.

748 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 110—2 120 MHz may also be used for Earth-to-space transmissions in the space research (deep space) service.

749 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 110—2 120 MHz may also be used in Japan for the space research (Earth-to-space) and space operation (Earth-to-space) services until 31 December 1990.

750 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 200—2 290 MHz may also be used for space-to-Earth and space-to-space transmissions in the space research, space operations and earth exploration-satellite services. These services shall operate in accordance with the provisions of Nos. 2557 to 2560; the space-to-space transmissions shall not cause harmful interference to the other space services.

751 In Australia, the United States and Papua New Guinea, the use of the band 2 310—2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

752 The band 2 400—2 500 MHz (centre frequency 2 450 MHz) is designated for industrial, scientific and medical (ISM) applications. Radio services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

753 In France, the band 2 450—2 550 MHz is allocated on a primary basis to the radiolocation service and on a secondary basis to the fixed and mobile services (see Nos. 424 and 425). Such use is subject to agreement with the administrations having services, operating or planned to operate in accordance with the Table, which may be affected.



754 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 500—2 535 MHz may also be used in Region 3 for the mobile-satellite (space-to-Earth), except aeronautical mobile-Satellite, service for operation limited to within national boundaries.

755 *Additional allocation:* In Canada, the band 2 500—2 550 MHz is also allocated to the radiolocation service on a primary basis.

756 *Additional allocation:* In the United Kingdom, the band 2 500—2 600 MHz is also allocated to the radiolocation service on a secondary basis.

757 The use of the band 2 500—2 690 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception and such use shall be subject to agreement obtained under the procedure set forth in Article 14. The power flux-density at the Earth's surface shall not exceed the values given in Nos. 6561 to 6564.

758 *Alternative allocation:* In the Federal Republic of Germany and Greece, the band 2 500—2 690 MHz is allocated to the fixed service on a primary basis.

759 *Alternative allocation:* In Bulgaria and the U.S.S.R., the band 2 500—2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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

761 The use of the bands 2 500—2 690 MHz in Region 2 and 2 500—2 535 MHz and 2 655—2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems; such use shall be subject to agreement obtained under the procedure set forth in Article 14, giving particular attention to the broadcasting-satellite service in Region 1. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564.

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

763 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 500—2 690 MHz may be used for tropospheric scatter systems in Region 1.

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

765 In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference in the band 2 655—2 690 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

766 Subject to agreement obtained under the procedure set forth in Article 14, the band 2 655—2 690 MHz may also be used in Region 3 for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries.

767 *Additional allocation:* In the Federal Republic of Germany and Austria, the band 2 690—2 695 MHz is also allocated to the fixed service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

768 All emissions in the band 2 690—2 700 MHz are prohibited, except those provided for by Nos. 767 and 769.

769 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, the Central African Republic, the Congo, the Ivory Coast, Cuba, Egypt, the United Arab Emirates, Ethiopia, Gabon, Guinea, Guinea-Bissau, Hungary, Iran, Iraq, Israel, Lebanon, Malaysia, Malawi, Mali, Morocco, Mauritania, Mongolia, Nigeria, Oman, Pakistan, the Philippines, Poland, Qatar, the Syria, German Democratic Republic, Roumania, Singapore, Somalia, Sri Lanka, Czechoslovakia, Tunisia, Thailand, the U.S.S.R., Yemen A.R., Yemen (P.D.R. of), Yugoslavia, Zaire and Zambia, the band 2 690—2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

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

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

772 In the bands 2 900—3 100 MHz, 5 470—5 650 MHz and 9 200—9 300 MHz, the use of shipborne transponder systems shall be confined to the sub-bands 2 930—2 950 MHz, 470—5 480 MHz and 9 280—9 300 MHz.

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

774 In the bands 2 900—2 920 MHz and 9 300—9 320 MHz in the maritime radionavigation service, the use of shipborne radars other than those existing on 1 January 1976 is not permitted.

775 In the bands 2 920—3 100 MHz and 9 320—9 500 MHz in the maritime radionavigation service, the use of fixed-frequency radar beacons (racons) on land or at sea is not permitted.

776 In the band 3 100—3 300 MHz, radar beacons (racons) and shipborne radars on merchant ships may operate within the band 3 100—3 266 MHz.

777 *Additional location:* In Bulgaria, Canada, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 3 100—3 300 MHz is also allocated to the radionavigation service on a primary basis.

778 In making assignments to stations of other service, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service from harmful interference in the bands 3 260—3 267 MHz, 3 332—3 339 MHz, 3 345.8—3 352.5 MHz and 4 825—4 835 MHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

779 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the Congo, the United Arab Emirates, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Singapore, Sri Lanka and Thailand, the band 3 300—3 400 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.

780 *Additional location:* In Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 3 300—3 400 MHz is also allocated to the radionavigation service on a primary basis.

781 *Additional allocation:* In the Federal Republic of Germany, Israel and the United Kingdom, the band 3 400—3 475 MHz is also allocated to the amateur service on a secondary basis.

782 *Different category of service:* In Austria, the allocation of the band 3 400—3 500 MHz to the radiolocation service is on a primary basis (see No. 425), subject to the agreement of the administrations of the following countries: Hungary, Italy, the German Democratic Republic, Czechoslovakia and Yugoslavia. Such use is limited to ground-based stations. However, this administration is urged to cease operations by 1985. After this date this administration shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

783 *Different category of service:* In Indonesia, Japan, Pakistan and Thailand, the allocation of the band 3 400—3 500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 425).

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

785 In Denmark, Norway and the United Kingdom, the fixed, radiolocation and fixed-satellite services operate on a basis of equality of rights in the band 3 400—3 600 MHz. However, these administrations operating radiolocation systems in this band are urged to cease operations by 1985. After this date these administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

786 In Japan, in the band 3 620—3 700 MHz, the radiolocation service is excluded.

787 *Additional allocation:* In New Zealand, the band 3 700—3 770 MHz is also allocated to the radiolocation service on a secondary basis.

788 *Additional allocation:* In the Federal Republic of Germany, Denmark, Norway and Sweden, the band 4 200—4 210 MHz is also allocated to the fixed service on a secondary basis.



789 Use of the band 4 200—4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the Earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

790 *Additional allocation:* In China, Iran, Libya, the Philippines and Sri Lanka, the band 4 200—4 400 MHz is also allocated to the fixed service on a secondary basis.

791 The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of  $\pm 2$  MHz of these frequencies and shall be subject to agreement obtained under the procedure set forth in Article 14.

792 *Alternative allocation:* In Belgium, Norway, the Netherlands and the United Kingdom, the band 4 500—4 800 MHz, is allocated to the fixed and mobile services on a primary basis. Such use shall not impose power flux-density limitations on the fixed-satellite service greater than those given in No. 2566.

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

794 *Different category of service:* In Argentina, Australia and Canada, the allocation of the bands 4 825—4 835 MHz and 4 950—4 990 MHz to the radio astronomy service is on a primary basis. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

795 In making assignments to stations of other services to which the band 4 990—5 000 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

796 The band 5 000—5 250 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band.

797 The bands 5 000—5 250 MHz, and 15.4—15.7 GHz are also allocated to the fixed-satellite service and the inter-satellite service, for connection between one or more earth stations at specified fixed points on the Earth and space stations, when these services are used in conjunction with the aeronautical radionavigation and/or aeronautical mobile (R) service. Such use shall be subject to agreement obtained under the procedure set forth in Article 14.

798 *Additional allocation:* In Austria, Bulgaria, Hungary, Libya, Mongolia, Poland, the German Democratic Republic, Rumania, Czechoslovakia and the U.S.S.R., the band 5 250—5 350 MHz is also allocated to the radionavigation service on a primary basis.

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

800 *Additional allocation:* In Afghanistan, Austria, Bulgaria, Hungary, Iran, Mongolia, Poland, the German Democratic Republic, Rumania, Czechoslovakia and the U.S.S.R., the band 5 470—5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

801 *Additional allocation:* In the United Kingdom, the band 5 470—5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. 2502, 2505, 2506 and 2507 shall apply in the band 5 725—5 850 MHz.

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

803 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, Central African Republic, China, Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand and Yemen (P.D.R. of) the band 5 650—5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

804 *Different category of service:* In Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 5 670—5 725 MHz to the space research service is on a primary basis (see No. 425).

805 *Additional allocation:* In Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 5 670—5 850 MHz is also allocated to the fixed service on a primary basis.

806 The band 5 725—5 875 MHz (centre frequency 5 800 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

807 *Additional allocation:* In the Federal Republic of Germany, the band 5 755—5 850 MHz is also allocated to the fixed service on a primary basis.

808 The band 5 830—5 850 MHz is also allocated to the amateur-satellite service (space-to-Earth) on a secondary basis.

809 In the band 6 425—7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075—7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the

needs of the earth exploration-satellite (passive) and space research (passive) services in their future planning of this band.

810 Subject to agreement obtained under the procedure set forth in Article 14, in Region 2, the band 7 125—7 155 MHz may be used for Earth-to-space transmissions in the space operation service.

811 Subject to agreement obtained under the procedure set forth in Article 14, the band 7 145—7 235 MHz may be used for Earth-to-space transmissions in the space research service. The use of the band 7 145—7 190 MHz is restricted to deep space; no emissions to deep space shall be effected in the band 7 190—7 235 MHz.

812 The bands 7 250—7 375 MHz (space-to-Earth) and 7 900—8 025 MHz (Earth-to-space) may also be used by the mobile-satellite service. The use of these bands by this service shall be subject to agreement obtained under the procedure set forth in Article 14.

813 In the band 8 025—8 400 MHz the power flux-density limits specified in No. 2570 shall apply in Regions 1 and 3 to the earth exploration-satellite service.

814 In Region 2, aircraft stations are not permitted to transmit in the band 8 025—8 400 MHz.

815 Subject to agreement obtained under the procedure set forth in Article 14, the band 8 025—8 400 MHz may be used for the earth exploration-satellite service (space-to-Earth) in Bangladesh, Benin, Cameroon, China, the Central African Republic, the Ivory Coast, Egypt, France, Guinea, Upper Volta, India, Iran, Israel, Italy, Japan, Kenya, Libya, Mali, Niger, Pakistan, Senegal, Somalia, Sudan, Sweden, Tanzania, Zaire and Zambia, on a primary basis.

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

817 *Different category of service:* In Belgium, Israel, Luxembourg, Malaysia, Singapore and Sri Lanka, the allocation of the band 8 400—8 500 MHz to the space research service is on a secondary basis (see No. 424).

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

819 *Additional allocation:* In Saudi Arabia, Bahrain, Bangladesh, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guinea, Guyana, Indonesia, Iran, Iraq, Israel, Jamaica, Kuwait, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, Qatar, Syria, Senegal, Singapore, Somalia, Sri Lanka, Tanzania, Chad, Thailand, Togo and Tunisia, the band 8 500—8 750 MHz is also allocated to the fixed and mobile services on a primary basis.

820 *Additional allocation:* In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Rumania, Czechoslovakia and the U.S.S.R., the band 8 500—8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

821 The use of the band 8 750—8 850 MHz by the aeronautical radionavigation service is



limited to airborne doppler navigation aids on a centre frequency of 8 800 MHz.

822 *Additional allocation:* In Algeria, the Federal Republic of Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran, Libya, the Netherlands, Qatar, Sudan and Thailand, the bands 8 825—8 850 MHz and 9 000—9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only.

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

824 *Additional allocation:* In Austria, Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., bands 8 850—9 000 MHz and 9 200—9 300 MHz are also allocated to the radionavigation service on a primary basis.

825 The use of the band 9 300—9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300—9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. In the band 9 300—9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

826 *Different category of service:* In Afghanistan, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Ethiopia, Guyana, India, Indonesia, Iran, Iraq, Israel, Jamaica, Japan, Jordan, Kuwait, the Lebanon, Liberia, Malaysia, Nigeria, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Thailand, Trinidad and Tobago, and Yemen (P.D.R. of), the allocation of the band 9 800—10 000 MHz to the fixed service is on a primary basis (see No. 425).

827 *Additional allocation:* In Bulgaria, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 9 800—10 000 MHz is also allocated to the radionavigation service on a primary basis.

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

829 *Additional allocation:* In Costa Rica, Ecuador, Guatemala, and Honduras, the band 10—10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

830 *Additional allocation:* In the Federal Republic of Germany, Angola, China, Ecuador, Spain, Japan, Kenya, Morocco, Nigeria, Sweden, Tanzania and Thailand, the band 10.45—10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

831 In the band 10.6—10.68 GHz, the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed -3 dBW. These limits may be exceeded subject to agreement obtained under the procedure set forth in Article 14. However, in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the United Arab

Emirates, Finland, India, Indonesia, Iran, Iraq, Japan, Kuwait, Lebanon, Nigeria, Pakistan, the Philippines, Qatar, Syria and the U.S.S.R., the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable.

832 In making assignments to stations of other services to which the band 10.6—10.68 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

833 All emissions in the band 10.68—10.7 GHz are prohibited except for those provided for by No. 834.

834 *Additional allocation:* In Saudi Arabia, Bahrain, Bulgaria, Cameroon, China, Colombia, the Republic of Korea, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Iran, Iraq, Israel, Japan, Kuwait, Lebanon, Mongolia, Pakistan, Poland, Qatar, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R. and Yugoslavia, the band 10.68—10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

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

836 In Region 2, in the band 11.7—12.1 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service. The upper limit of this band shall be modified in accordance with the decisions of the 1983 Regional Administrative Radio Conference for Region 2 (see No. 841).

837 *Different category of service:* In Canada, Mexico and the United States, the allocation of the band 11.7—12.2 GHz to the fixed service is on a secondary basis (see No. 424).

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

839 The use of the band 11.7—12.7 GHz in Region 2 by the fixed-satellite and broadcasting-satellite services is limited to national and sub-regional systems and is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles 11, 13, 14, and Resolution 33).

840 For the use of the band 11.7—12.75 GHz in Regions 1, 2 and 3, see Resolutions 31, 34, 504, 700 and 701.

841 The 1983 regional administrative radio conference for Region 2 will divide the band 12.1—12.3 GHz into two sub-bands. It will allocate the lower sub-band to the fixed-satellite service and the upper sub-band to the broadcasting-satellite, broadcasting, mobile except aeronautical mobile, and fixed services, all services being on a primary basis.

842 *Additional allocation:* The bands 12.1—12.3 GHz in Brazil and Peru and 12.2—12.3 GHz in the United States are also allocated to the fixed service on a primary basis.

843 In the band 12.1—12.7 GHz, the Region 2 space services, existing or planned before the 1983 regional administrative radio conference for Region 2, shall not impose restrictions on the elaboration of the Plan for the broadcasting-satellite service in Region 2 and shall be operated under the conditions set forth by that conference.

844 In Region 2, in the band 12.1—12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in accordance with the broadcasting-satellite plan to be prepared at the 1983 regional administrative radio conference for Region 2, and shall not impose restrictions on the elaboration of such a plan. The lower limit of this band shall be modified in accordance with the decisions of that conference for the Region 2 (see No. 841).

845 In Region 3 the band 12.2—12.5 GHz is also allocated to the fixed-satellite (space to Earth) service limited to national and sub-regional systems. The power flux-density limits in No. 2574 shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix 30 with the applicable frequency band extended to cover 12.2—12.5 GHz.

846 In Region 2, in the band 12.3—12.7 GHz, assignments to stations of the broadcasting-satellite service made available in the plan to be established by the 1983 regional administrative radio conference for Region 2 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference or require more protection from interference than the broadcasting-satellite service transmissions operating in accordance with that plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service. The lower limit of this band shall be modified in accordance with the decisions of that conference for Region 2 (see No. 841).

847 The broadcasting-satellite service in the band 12.5—12.75 GHz in Region 3 is limited to community reception with a power flux-density not exceeding -111 (dBW/m<sup>2</sup>) as defined in Annex 8 of Appendix 30.

848 *Additional allocation:* In Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Republic, the Congo, the Ivory Coast, Egypt, the United Arab Emirates,



Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Niger, Nigeria, Qatar, Syria, Senegal, Somalia, Sudan, Chad, Togo, Yemen (P.D.R. of) and Zaire, the band 12.5—12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

849 *Additional allocation:* In the Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, Greece, Liechtenstein, Luxembourg, Monaco, Norway, Uganda, the Netherlands, Portugal, Roumania, Sweden, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5—12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

850 *Additional allocation:* In Austria, Bulgaria, Hungary, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 12.5—12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite earth stations of countries in Region 1 other than those mentioned in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries mentioned in this footnote.

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

852 Subject to agreement obtained under the procedure set forth in Article 14, the band 13.25—13.4 GHz may also be used in the space research service (Earth-to-space) on a secondary basis.

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

854 *Additional allocation:* In Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Finland, Gabon, Guinea, Indonesia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sri Lanka, Sudan, Sweden, Chad, Thailand and Tunisia, the band 13.4—14 GHz is also allocated to the fixed and mobile services on a primary basis.

855 *Additional allocation:* In Austria, Bulgaria, Hungary, Japan, Mongolia, Poland, the German Democratic Republic, Roumania, the United Kingdom, Czechoslovakia and the U.S.S.R., the band 13.4—14 GHz is also allocated to the radionavigation service on a primary basis.

856 The use of the band 14—14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service (see Recommendation 708).

857 *Additional allocation:* In Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, Lebanon,

Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Switzerland, Tanzania, Chad, Thailand and Yemen (P.D.R. of), the band 14—14.3 GHz is also allocated to the fixed service on a primary basis.

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

859 The band 14—14.5 GHz is also allocated to the land mobile-satellite service (Earth-to-space) on a secondary basis.

860 *Additional allocation:* In the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Iceland, Italy, Jordan, Libya, Liechtenstein, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland, Turkey and Yugoslavia, the band 14.25—14.3 GHz is also allocated to the fixed service on a primary basis.

861 *Additional allocation:* In Japan, Pakistan, the United Kingdom and Thailand, the band 14.25—14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis.

862 In making assignments to stations of others services to which the band 14.47—14.5 GHz is allocated, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

863 The use of the band 14.5—14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe and for Malta.

864 All emissions in the band 15.35—15.4 GHz are prohibited, except those provided for by No. 865.

865 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Pakistan, Iran, Iraq, Israel, Kuwait, Lebanon, Libya, Qatar, Syria, Somalia and Yugoslavia, the band 15.35—15.4 GHz is also allocated to the fixed and mobile services on a secondary basis.

866 *Additional allocation:* In Afghanistan, Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran, Kuwait, Libya, Malaysia, Malawi, Malta, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Chad, Thailand, Yemen (P.D.R. of) and Yugoslavia, the band 15.7—17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

867 *Additional allocation:* In Israel, the band 15.7—17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from, or cause harmful interference to services operating in accordance with the

Table in countries other than those included in 866.

868 *Additional allocation:* In Afghanistan, Algeria, the Federal Republic of Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, Libya, Nepal, Nicaragua, Pakistan, Qatar, Sudan, Sri Lanka, Sweden, Thailand and Yugoslavia, the band 17.3—17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. 2505 and 2508 shall apply provisionally (see Resolution 101).

869 The use of the band 17.3—18.1 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

870 The band 18.1—18.3 GHz is also allocated to the meteorological-satellite service (Earth-to-space) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of No. 2578.

871 In making assignments to stations in the fixed and mobile services, administrations are invited to take account of passive sensors in the earth-exploration satellite and space research services operating in the band 18.6—18.8 GHz. In this band, administrations should endeavor to limit as far as possible both the power delivered by the transmitter to the antenna and the e.i.r.p. in order to reduce the risk of interference to passive sensors to the minimum.

872 In assigning frequencies to stations in the fixed-satellite service in the direction (space-to-Earth), administrations are requested to limit as far as practicable the power flux-density at the Earth's surface in the band 18.6—18.8 GHz, in order to reduce the risk of interference to passive sensors in the earth exploration-satellite and space research services.

873 *Additional allocation:* In Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brazil, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Tanzania, Tunisia, Chad, Thailand, Togo and Zaire, the band 19.7—21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service.

874 In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service in the band 22.01—22.21 GHz from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see also Nos. 343 and 344 and Article 36).

875 In making assignments to stations of other services, administrations are urged to



take all practicable steps to protect the radio astronomy service from harmful interference in the band 22.21–22.5 GHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see also Nos. 343 and 344 and Article 36).

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

877 In Regions 2 and 3, the broadcasting-satellite service is authorized in the band 22.5–23.0 GHz, subject to agreement obtained under the procedure set forth in Article 14.

878 *Additional allocation:* In Japan, the band 22.5–23 GHz is also allocated to the broadcasting service on a primary basis.

879 In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of the radio astronomy service in the bands 22.81–22.86 GHz and 23.07–23.12 GHz from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

880 All emissions in the band 23.6–24 GHz are prohibited.

881 The band 24–24.25 GHz (centre frequency 24.125 GHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. 1815.

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

883 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Cameroon, China, the Republic of Korea, the United Arab Emirates, Ethiopia, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Chad and Thailand, the band 29.5–31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 2505 and 2508 shall apply.

884 In the band 31–31.3 GHz the power flux-density limits specified in No. 2542 shall apply to the space research service.

885 *Different category of service:* In Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 31–31.3 GHz to the space research service is on a primary basis (see No. 425).

886 In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference in the band 31.2–31.3 GHz. Emissions from space or airborne stations can be particularly serious sources of interference to the radio

astronomy service (see Nos. 343 and 344 and Article 36).

887 All emissions in the band 31.3–31.5 GHz are prohibited.

888 In Regions 1 and 3, in making assignments to stations of other services to which the band 31.5–31.8 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

In Region 2, all emissions in the band 31.5–31.8 GHz are prohibited.

889 *Different category of service:* In Bulgaria, Egypt, Hungary, Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the allocation of the band 31.5–31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 425).

890 *Different category of service:* In Australia, Spain and the United States, the allocation of the band 31.8–32.3 GHz to the space research (deep space) service in the space-to-Earth direction is on a primary basis (see No. 425). This use shall not impose power flux density constraints on the inter-satellite service in the band 32–32.3 GHz.

891 *Different category of service:* In Bulgaria, Cuba, Hungary, Mongolia, Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 31.8–32.3 GHz to the space research service is on a primary basis (see No. 425).

892 Subject to agreement obtained under the procedure set forth in Article 14, the band 31.8–33.8 GHz may also be used in Japan for space-to-Earth transmissions in the fixed-satellite service up to 31 December 1990.

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

894 *Additional allocation:* In Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Spain, Finland, Gabon, Guinea, Indonesia, Iran, Iraq, Israel, Kenya, Kuwait, Lebanon, Libya, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Thailand, Togo, Tunisia, Yemen A.R. and Zaire, the band 33.4–36 GHz is also allocated to the fixed and mobile services on a primary basis.

895 *Different category of service:* In Australia, Spain and the United States, the allocation of the band 34.2–34.7 GHz to the space research (deep space) (Earth-to-space) service is on a primary basis (see No. 425).

896 *Different category of service:* In Bulgaria, Cuba, Hungary, Poland, Mongolia, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the allocation of the band 34.2–35.2 GHz to the space research service is on a primary basis (see No. 425).

897 Radars located on spacecraft may be operated on a primary basis in the band 35.5–35.6 GHz.

898 In making assignments to stations of other services, administrations are urged to take all practicable steps to protect the spectral line observations of 36.43–36.5 GHz from harmful interference. Emission from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

899 Subject to agreement obtained under the procedure set forth in Article 14, the band 37–39 GHz may also be used in Japan for Earth-to-space transmissions in the fixed-satellite service up to 31 December 1990.

900 In making assignments to stations of other services to which the band 42.5–43.5 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference, especially in the bands 42.77–42.87 GHz, 43.07–43.17 GHz, and 43.37–43.47 GHz, which are used for spectral line observations of silicon monoxide. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

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

902 In the bands 43.5–47 GHz, 66–71 GHz, 95–100 GHz, 134–142 GHz, 190–200 GHz and 252–265 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. 435).

903 In the bands 43.5–47 GHz, 66–71 GHz, 95–100 GHz, 134–142 GHz, 190–200 GHz and 252–265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

904 The bands 48.94–49.04 GHz and 97.88–98.08 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

905 In the band 48.94–49.04 GHz, all emissions from airborne stations are prohibited.

906 In the bands 51.4–54.25 GHz, 58.2–59 GHz, 64–65 GHz and 72.77–72.91 GHz, radio astronomy observations may be carried



out under national arrangements.

Administrations are urged to take all practicable steps to protect radio astronomy observations in these bands from harmful interference.

907 In the bands 51.4—54.25 GHz, 58.2—59 GHz, 64—65 GHz, 86—92 GHz, 105—116 GHz and 217—231 GHz, all emissions are prohibited.

908 *Additional allocation:* In the Federal Republic of Germany, Japan and the United Kingdom, the band 54.25—58.2 GHz is also allocated to the radiolocation service on a primary basis.

909 In the bands 54.25—58.2 GHz 59—64 GHz, 116—134 GHz, 170—182 GHz and 185—190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. 435).

910 In the bands 59—64 GHz and 126—134 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. 435).

911 The band 61—61.5 GHz (centre frequency 61.25 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administrations concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest CCIR Recommendations.

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

913 In the band 84—86 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

914 The band 93.07—93.27 GHz is also used by the radio astronomy service for spectral line observations. In making assignments to stations of the services to which this band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

915 The band 119.98—120.02 GHz is also allocated to the amateur service on a secondary basis.

916 The band 122—123 GHz (centre frequency 122.5 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest CCIR Recommendations.

917 In the bands 140.69—140.98 GHz all emissions from airborne stations, and from

space stations in the space-to-Earth direction, are prohibited.

918 The band 140.69—140.98 GHz, 144.68—144.98 GHz, 145.45—145.75 GHz and 146.82—147.12 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services to which the bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service (see Nos. 343 and 344 and Article 36).

919 The bands 150—151 GHz, 174.42—175.02 GHz, 177—177.4 GHz, 178.2—178.6 GHz, 181—181.46 GHz and 186.2—186.6 GHz are also allocated to the radio astronomy service on a secondary basis for spectral line observation. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

920 *Additional allocation:* In the United Kingdom the band 182—185 GHz is also allocated to the fixed and mobile services on a primary basis.

921 In the band 182—185 GHz all emissions are prohibited except those under the provisions of No. 920.

922 The band 244—246 GHz (centre frequency 245 GHz) is designated for industrial, scientific and medical (ISM) applications. The use of this frequency band for ISM applications shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected. In applying this provision administrations shall have due regard to the latest CCIR Recommendations.

923 The bands 250—251 GHz and 262.24—262.76 GHz are also allocated to the radio astronomy service on a primary basis for spectral line observations. In making assignments to stations of other services spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343, 344 and Article 36).

924 The band 257.5—258 GHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343, 344 and Article 36).

925 In the Federal Republic of Germany, Argentina, Spain, France, Finland, India, Italy, the Netherlands and Sweden, the band 261—

265 GHz is also allocated to the radio astronomy service on a primary basis. In making assignments to stations of other services to which the band is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

926 In making assignments to stations of other services to which the band 265—275 GHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference, especially in the bands 265.64—266.16 GHz, 267.34—267.86 GHz and 271.74—272.26 GHz, which are used for spectral line observations. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343, 344 and Article 36).

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

(a) Radio astronomy service: 278—280 GHz and 343—348 GHz.

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

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

#### United States Footnotes

(These footnotes, each consisting of the letters US followed by one or more digits, denote stipulations applicable to both Government and non-Government stations.)

US7 In the band 420—450 MHz and within the following areas, the peak envelope power output of a transmitter employed in the amateur service shall not exceed 50 watts, unless expressly authorized by the Commission after mutual agreement, on a case-by-case basis, between the Federal Communications Commission Engineer in Charge at the applicable District office and the Military Area Frequency Coordinator at the applicable military base:

(a) Those portions of Texas and New Mexico bounded on the south by latitude 31°45' North, on the east by 104°00' West, on the north by latitude 34°30' North, and on the west by longitude 107°30' West;

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



(c) The entire State of Arizona;

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

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

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

(g) In the State of Alaska within a 160-kilometer (100 mile) radius of Clear, Alaska (latitude 64°17' North, longitude 149°10' West). (The Military Area Frequency Coordinator for this area is located at Elmendorf Air Force Base, Alaska.)

(h) In the State of North Dakota within a 160-kilometer (100 mile) radius of Concrete, North Dakota (latitude 48°43' North, longitude 97°54' West). (The Military Area Frequency Coordinator for this area can be contacted at: HQ SAC/SXOE, Offutt Air Force Base, Nebraska 68113.)

US8 The use of the frequencies 170.475, 171.425, 171.575, and 172.275 MHz east of the Mississippi River, and 170.425, 170.575, 171.475, 172.225 and 172.375 MHz west of the Mississippi River may be authorized to fixed, land and mobile stations operated by non-Federal forest firefighting agencies. In addition, land stations and mobile stations operated by non-Federal conservation agencies, for mobile relay operation only, may be authorized to use the frequency 172.275 MHz east of the Mississippi River and the frequency 171.475 MHz west of the Mississippi River. The use of any of the foregoing nine frequencies shall be on the condition that no harmful interference will be caused to Government stations.

US10 The use of the frequencies 26.62, 143.90 and 148.15 MHz may be authorized to Civil Air Patrol land stations and Civil Air Patrol mobile stations.

US11 The use of the frequencies 106.250 and 170.150 MHz may be authorized to non-Government remote pickup broadcast base and land mobile stations and to non-Government base, fixed and land mobile stations in the public safety radio services (the sum of the bandwidth of emission and tolerance is not to exceed 25 kHz, except that authorizations in existence as of December 20, 1974, using a larger bandwidth are permitted to continue in operation until December 20, 1979) in the continental United States (excluding Alaska) only, except within the area bounded on the west by the Mississippi River, on the north by the parallel of latitude 37°30' N., and on the east and south by that arc of the circle with center at Springfield, Illinois, and radius equal to the airline distance between Springfield, Illinois, and Montgomery, Alabama, subtended between the foregoing west and north boundaries, on the condition that harmful interference will not be caused to Government stations present or future in the Government band 162-174 MHz. The use of these frequencies by remote pickup

broadcast stations will not be authorized for locations within 150 miles of New York City; and use of these frequencies by the public safety radio services will not be authorized except for locations within 150 miles of New York City.

US13 For the specific purpose of transmitting hydrological and meteorological data in co-operation with agencies of the Federal Government, the following frequencies may be authorized to non-Government fixed stations on the condition that harmful interference will not be caused to Government stations.

| MHz     |         |         |
|---------|---------|---------|
| 169.425 | 171.025 | 406.125 |
| 169.450 | 171.050 | 406.175 |
| 169.475 | 171.075 | 406.675 |
| 169.500 | 171.100 | 409.725 |
| 169.525 | 171.125 | 412.625 |
| 170.225 | 171.825 | 412.675 |
| 170.250 | 171.850 | 412.725 |
| 170.275 | 171.875 | 412.775 |
| 170.300 | 171.900 |         |
| 170.325 | 171.925 |         |

Licensees holding a valid authorization on June 11, 1962, to operate on the frequencies 169.575, 170.375 or 171.975 MHz may continue to be authorized for such operations on the condition that harmful interference will not be caused to Government stations.

US14 When 500 kHz is being used for distress purposes, ship and coast stations may use 512 kHz for calling.

US18 Navigation aids in the US and possessions in the bands 9-14 kHz, 90-110 kHz, 190-415 kHz, 510-535 kHz, 2700-2900 MHz are normally operated by the U.S. Government. However, authorizations may be made by the FCC for non-Government operation in these bands subject to the conclusion of appropriate arrangements between the FCC and the Government agencies concerned and upon special showing of need for service which the Government is not yet prepared to render.

US25 The use of frequencies in the band 25.85-26.1 MHz may be authorized in any area to non-Government remote pickup broadcast base and mobile stations on the condition that harmful interference is not caused to stations in the broadcasting service.

US26 The bands 117.975-121.4125 MHz, 123.5875-128.8125 MHz and 132.0125-136.0 MHz are for air traffic control communications.

US28 The band 121.5875-121.9375 MHz is for use by aeronautical utility land and mobile stations, and for air traffic control communications.

US30 The band 121.9375-123.0875 MHz is available to FAA aircraft for communications pursuant to flight inspection functions in accordance with the Federal Aviation Act of 1958.

US31 Except as provided below the band 121.9375-123.0875 MHz is for use by private aircraft stations.

The frequencies 122.700, 122.725, 122.750, 122.800, 122.950, 122.975, 123.000, 123.050 and 123.075 MHz may be assigned to aeronautical advisory stations. In addition, at landing areas having a part-time or no airdrome control tower or FAA flight service station, these frequencies may be assigned on a

secondary non-interference basis to aeronautical utility mobile stations, and may be used by FAA ground vehicles for safety related communications during inspections conducted at such landing areas.

The frequencies 122.850, 122.900 and 122.925 MHz may be assigned to aeronautical multicom stations. In addition, 122.850 MHz may be assigned on a secondary noninterference basis to aeronautical utility mobile stations. In case of 122.925 MHz, US213 applies.

Air carrier aircraft stations may use 122.000 and 122.050 MHz for communication with aeronautical stations of the Federal Aviation Administration and 122.700, 122.800, 122.900 and 123.000 MHz for communications with aeronautical stations pertaining to safety of flight with and in the vicinity of landing areas not served by a control tower.

Frequencies in the band 121.9375-122.6875 MHz may be used by aeronautical stations of the Federal Aviation Administration for communication with private aircraft stations only, except that 122.000 and 122.050 MHz may also be used for communication with air carrier aircraft stations concerning weather information.

US32 Except for the frequencies 123.3 and 123.5 MHz, which are not authorized for Government use, the band 123.1125-123.5875 MHz is available for FAA communications incident to flight test and inspection activities pertinent to aircraft and facility certification on a secondary noninterference basis.

US33 The band 123.1125-123.5875 MHz is for use by flight test and aviation instructional stations. The frequency 121.950 MHz is available for aviation instructional stations.

US39 Radio altimeters are permitted to use the band 1600-1660 MHz only until such time as international standardization of other aeronautical radionavigation systems or devices requires the discontinuance of radio altimeters in this band.

US40 The band 1592.5-1622.5 MHz is allotted provisionally, but on a primary basis, for the collision avoidance function, noting the continued use of existing altimeters in the band 1600-1660 MHz.

US41 The Government radiolocation service is permitted in the band 2450-2500 MHz on condition that harmful interference is not caused to non-Government services.

US44 The non-Government radiolocation service may be authorized in the band 2900-3100 MHz on the condition that no harmful interference is caused to Government services.

US48 The non-Government radiolocation service may be authorized in the bands 5350-5460 MHz and 9000-9200 MHz on the condition that it does not cause harmful interference to the aeronautical radionavigation service or to the Government radiolocation service.

US49 The non-Government radiolocation service may be authorized in the band 5460-5470 MHz on the condition that it does not cause harmful interference to the aeronautical or maritime radionavigation services or to the Government radiolocation service.



US50 The non-Government radiolocation service may be authorized in the band 5470–5600 MHz on the condition that it does not cause harmful interference to the maritime radionavigation service or to the Government radiolocation service.

US51 In the band 5600–5650 MHz and 9300–9500 MHz, the non-Government radiolocation service shall not cause harmful interference to the Government radiolocation service.

US53 In view of the fact that the band 13.25–13.4 GHz is allocated to doppler navigation aids, Government, and non-Government airborne doppler radars in the aeronautical radionavigation service are permitted in the band 8750–8850 MHz only on the condition that they must accept any interference that may be experienced from stations in the radiolocation service in the band 8500–10000 MHz.

US54 Temporarily, and until certain operations of the radiolocation service in the band 9000–9200 MHz can be transferred to other appropriate frequency bands, the aeronautical radionavigation service may, in certain geographical areas, be subject to receiving some degree of interference from the radiolocation service.

US58 In the band 10000–10500 MHz, pulsed emissions are prohibited, except for weather radars on board meteorological satellites in the band 10000–10025 MHz. The amateur service and the non-Government radiolocation service, which shall not cause harmful interference to the Government radiolocation service, are the only non-Government services permitted in this band. The non-Government radiolocation service is limited to survey operations as specified in footnote US108.

US59 The band 10.5–10.55 GHz is restricted to systems using type NON (AO) emission with a power not to exceed 40 watts into the antenna.

US65 The use of the band 5460–5650 MHz by the maritime radionavigation service is limited to shipborne radars.

US66 The use of the band 9300–9500 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9300–9320 MHz on the condition that harmful interference is not caused to the maritime radionavigation service.

US67 The use of the band 9300–9500 MHz by the meteorological aids service is limited to ground-based radars. Radiolocation installations will be coordinated with the meteorological aids service and, insofar as practicable, will be adjusted to meet the requirements of the meteorological aids service.

US69 In the band 31.8–33.4 GHz, ground-based radionavigation aids are not permitted except where they operate in cooperation with airborne or shipborne radionavigation devices.

US70 The meteorological aids service allocation in the band 400.15–406.0 MHz does not preclude the operation therein of associated ground transmitters.

US71 In the band 9300–9320 MHz, low-powered maritime radionavigation stations

shall be protected from harmful interference caused by the operation of land-based equipment.

US74 In the bands 25.55–25.67, 73.0–74.6, 406.1–410.0, 608–614, 1400–1427, 1660.5–1670.0, 2690–2700 and 4990–5000 MHz and in the bands 10.68–10.7, 15.35–15.4, 23.6–24.0, 31.3–31.5, 86–92, 105–116 and 217–231 GHz, the radio astronomy service shall be protected from extraband radiation only to the extent that such radiation exceeds the level which would be present if the offending station were operating in compliance with the technical standards or criteria applicable to the service in which it operates.

US77 Government stations may also be authorized:

(a) Port operations use on a simplex basis by coast and ship stations of the frequencies 156.6 and 156.7 MHz;

(b) Duplex port operations use of the frequency 157.0 MHz for ship stations and 161.6 MHz for coast stations;

(c) Inter-ship use of 156.3 MHz on a simplex basis; and

(d) Vessel traffic services under the control of the U.S. Coast Guard on a simplex basis by coast and ship stations of the frequencies 156.25, 156.55, 156.6 and 156.7 MHz.

(e) Navigational bridge-to-bridge and navigational communications on a simplex basis by coast and ship stations of the frequencies 156.375 and 156.65 MHz.

US78 In the band 1435–1535 MHz, the frequencies between 1435 and 1485 MHz will be assigned primarily for the flight testing of manned aircraft, or major components thereof; the frequencies between 1485 and 1535 MHz will be assigned primarily for the flight testing of unmanned aircraft and missiles or major components thereof. Included as permissible usage for aeronautical telemetering stations in the band 1435–1535 MHz is telemetry associated with launching and re-entry into the earth's atmosphere, as well as any incidental orbiting prior to re-entry, of manned or unmanned objects undergoing flight tests. In the band 1530–1535 MHz the maritime mobile-satellite service will be the only primary service after 1 January 1990.

US80 Government stations may use the frequency 122.9 MHz subject to the following conditions:

(a) All operations by Government stations shall be restricted to the purpose for which the frequency is authorized to non-Government stations, and shall be in accordance with the appropriate provisions of the Commission's Rules and Regulations, Part 87, Aviation Services;

(b) Use of the frequency is required for coordination of activities with Commission licensees operating on this frequency; and

(c) Government stations will not be authorized for operation at fixed locations.

US81 The band 38.0–38.25 MHz is used by both Government and non-Government radio astronomy observatories. No new fixed or mobile assignments are to be made and Government stations in the band 38.0–38.25 MHz will be moved to other bands on a case-by-case basis, as required, to protect radio astronomy observations from harmful interference. As an exception, however, low powered military transportable and mobile

stations used for tactical and training purposes will continue to use the band. To the extent practicable, the latter operations will be adjusted to relieve such interference as may be caused to radio astronomy observations. In the event of harmful interference from such local operations, radio astronomy observatories may contact local military commands directly, with a view to effecting relief. A list of military commands, areas of coordination, and points of contact for purposes of relieving interference may be obtained upon request from the Office of the Chief Scientist, Federal Communications Commission, Washington, D.C. 20554.

US82 The assignable frequencies in the bands 4143.6–4146.6 kHz, 6218.6–6224.6 kHz, 8291.1–8297.3 kHz, 12,429.2–12,439.5 kHz, 16,587.1–16,596.4 kHz and 22,124–22,139.5 kHz may be authorized on a shared non-priority basis to Government and non-Government ship and coast stations (SSB telephony, with peak envelope power not to exceed 1 kW).

US87 The frequency 450 MHz, with maximum emission bandwidth of 500 kHz, may be used by Government and non-Government stations for space telecommand at specific locations, subject to such conditions as may be applied on a case-by-case basis.

US90 In the band 2025–2110 MHz earth-to-space and space-to-space transmissions may be authorized in the space research and earth exploration-satellite services subject to such conditions as may be applied on a case-by-case basis. Such transmissions shall not cause harmful interference to non-Government stations operating in accordance with the Table of Frequency Allocations. All space-to-space transmissions reaching the earth's surface shall adhere to a power flux density of between –144 and –154 dBW/(m<sup>2</sup>)/4 kHz depending on the angle of arrival per ITU Radio Regulation 2557 and shall not cause harmful interference to the other space services.

US93 In the conterminous United States, the frequency 108.0 MHz may be authorized for use by VOR test facilities, the operation of which is not essential for the safety of life or property, subject to the condition that no interference is caused to the reception of FM broadcasting stations operating in the band 88–108 MHz. In the event that such interference does occur, the licensee or other agency authorized to operate the facility shall discontinue operation on 108 MHz and shall not resume operation until the interference has been eliminated or the complaint otherwise satisfied. VOR test facilities operating on 108 MHz will not be protected against interference caused by FM broadcasting stations operating in the band 88–108 MHz not shall the authorization of a VOR test facility on 108 MHz preclude the Commission from authorizing additional FM broadcasting stations.

US99 In the band 1668.4–1670.0 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 Electromagnetic Management Unit, National Science Foundation, Washington, D.C. 20550.

US102 In Alaska only, the frequency 122.1 MHz may also be used for air carrier air traffic control purposes at locations where other frequencies are not available to air carrier aircraft stations for air traffic control.

US104 The LORAN Radionavigation System has priority in band 90–110 kHz in the United States and possessions. Radiolocation land stations making use of LORAN type equipment may be authorized to both Government and non-Government on a secondary service basis for offshore radiolocation activities only at specific locations and subject to such technical and operational conditions (e.g., power, emission, pulse rate and phase code, hours of operation), including on-the-air testing, as may be required on a case-by-case basis to ensure protection of the LORAN radionavigation system from harmful interference and to ensure mutual compatibility among radiolocation operators. Such authorizations to stations in the radiolocation service are further subject to showing of need for service which is not currently provided and which the Government is not yet prepared to render by way of the radionavigation service.

US106 The frequency 156.75 MHz is available for assignment to non-Government and Government stations for environmental communications in accordance with an agreed plan.

US107 The frequency 156.8 MHz is the national distress, safety and calling frequency for the maritime mobile VHF radiotelephone service for use by Government and non-Government ship and coast stations. Guard bands of 156.7625–156.7875 and 156.8125–156.8375 MHz are maintained.

US108 Within the bands 3300–3500 MHz and 10000–10500 MHz, survey operations, using transmitters with a peak power not to exceed five watts into the antenna, may be authorized for Government and non-Government use on a secondary basis to other Government radiolocation operations.

US110 In the frequency bands 3100–3300 MHz, 3500–3700 MHz, 5250–5350 MHz, 8500–9000 MHz, 9200–9300 MHz, 9500–10000 MHz, 13.4–14.0 GHz, 15.7–17.3 GHz, 24.05–24.25 GHz and 33.4–36.0 GHz, the non-Government radiolocation service shall be secondary to the Government radioactive service and to airborne doppler radars at 8800 MHz, and shall provide protection to airport surface detection equipment (ASDE) operating between 15.7–16.2 GHz.

US111 In the band 1990–2120 MHz, Government space research earth stations may be authorized to use specific frequencies at specific locations for earth-to-space transmissions. Such authorizations shall be secondary to non-Government use of this band and subject to such other conditions as may be applied on a case-by-case basis. Corpus Christi, Tex., 27°39'N., 097°23'W. Fairbanks, Alaska, 64°59'N., 147°53'W. Goldstone, Calif., 35°18'N., 116°54'W. Greenbelt, Md., 39°00'N., 076°50'W. Guam, Mariana Is., 13°19'N., 144°44'E. Kauai, Hawaii, 22°08'N., 159°40'W.

Merritt Is., Fla., 28°29'N., 080°35'W. Rosman, N.C., 35°12'N., 082°52'W. Wallops Is., Va., 37°57'N., 075°20'W.

US112 The frequency 123.1 MHz is for search and rescue communications. This frequency may be assigned for air traffic control communications at special aeronautical events on the condition that no harmful interference is caused to search and rescue communications during any period of search and rescue operations in the locale involved.

US116 In the bands 890–902 and 928–942 MHz, no new assignments are to be made to Government radio stations after July 10, 1970, except, on a case-by-case basis, to experimental stations and to additional stations of existing networks in Alaska. Government assignments, existing prior to July 10, 1970, to stations in Alaska may be continued. All other existing Government assignments shall be on a secondary basis to stations in the non-Government land mobile service and shall be subject to adjustment or removal from the bands 890–902 and 928–942 MHz at the request of the FCC.

US117 In the band 406.1–410 MHz, all new authorizations will be limited to a maximum 7 watts per kHz of necessary bandwidth; existing authorizations as of November 30, 1970 exceeding this power are permitted to continue in use.

New authorizations in this band stations, other than mobile stations, within the following areas are subject to prior coordination by the applicant through the Electromagnetic Spectrum Management Unit, National Science Foundation, Washington, D.C. 20550, (202-357-9696):

**Arecibo Observatory:**

Rectangle between latitudes 17°30'N. and 19°00'N. and between longitudes 65°10'W. and 68°00'W.

**Owens Valley Radio Observatory:**

Two contiguous rectangles, one between latitudes 36°N. and 37°N. and longitudes 117°40'W. and 118°30'W. and the second between latitudes 37°N. and 38°N. and longitudes 118°W. and 118°50'W.

**Sagamore Hill Radio Observatory:**

Rectangle between latitudes 42°10'N. and 43°00'N. and longitudes 70°31'W. and 71°31'W.

**Table Mountain Solar Observatory (NOAA), Boulder, Colorado (407–409 MHz only):**

Rectangle between latitudes 39°30'N. and 40°30'N. and longitudes 104°30'W. and 106°00'W. or the Continental Divide whichever is farther east.

The non-Government use of this band is limited to the radio astronomy service and as provided by footnote US13.

US201 In the band 460–470 MHz, space stations in the earth exploration-satellite service may be authorized for space-to-earth transmissions on a secondary basis with respect to the fixed and mobile services. When operating in the meteorological-satellite service, such stations shall be protected from harmful interference from other applications of the earth exploration-satellite service. The power flux produced at the earth's surface by any space station in this band shall not exceed –152 dBW/m<sup>2</sup>/kHz.

US203 Radio astronomy observations of the formaldehyde line frequencies 4825–4835 MHz and 14.470–14.500 GHz may be made at certain radio astronomy observatories as indicated below:

**BANDS TO BE OBSERVED**

| 4 GHz  | 14 GHz | Observatory                                                                               |
|--------|--------|-------------------------------------------------------------------------------------------|
| X..... |        | National Astronomy and Ionosphere Center, Arecibo, Puerto Rico.                           |
| X..... | X..... | National Radio Astronomy Observatory, Green Bank, W. Va.                                  |
| X..... | X..... | National Radio Astronomy Observatory, Socorro, New Mexico.                                |
| X..... | X..... | Hat Creek Observatory (U of Calif.), Hat Creek, Cal.                                      |
| X..... | X..... | Haystack Radio Observatory (MIT-Lincoln Lab), Tyngsboro, Mass.                            |
| X..... | X..... | Owens Valley Radio Observatory (Cal. Tech.), Big Pine, Cal.                               |
|        | X..... | Five College Radio Astronomy Observatory Quabbin Reservoir (near Amherst), Massachusetts. |

Every practicable effort will be made to avoid the assignment of frequencies to stations in the fixed or mobile services in these bands. Should such assignments result in harmful interference to these observations, the situation will be remedied to the extent practicable.

US205 Tropospheric scatter systems are prohibited in the band 2500–2690 MHz.

US208 Planning and use of the band 1559–1626.5 MHz necessitate the development of technical and/or operational sharing criteria to ensure the maximum degree of electromagnetic compatibility with existing and planned systems within the band.

US209 The use of frequencies 460.6625, 460.6875, 460.7125, 460.7375, 460.7625, 460.7875, 460.8125, 460.8375, 460.8625, 465.6625, 465.6875, 465.7125, 465.7375, 465.7625, 465.7875, 465.8125, 465.8375, and 465.8625 MHz may be authorized, with 100 mW or less output power, to Government and non-Government radio stations for one-way, non-voice bio-medical telemetry operations in hospitals, or medical or convalescent centers.

US210 Use of frequencies in the bands 40.66–40.70 and 216–220 MHz may be authorized to Government and non-Government stations on a secondary basis for the tracking of, and telemetering of scientific data from, ocean buoys and wildlife. Airborne wildlife telemetry in the 216–220 MHz band will be limited to the 216.0–216.1 MHz portion of the band. Operation in these two bands is subject to the technical standards specified in: (a) Section 8.2.42 of the NTIA Manual for Government use, or (b) Section 5.108 of the Commission's Rules for non-Government use.

US211 In the bands 1670–1690, 5000–5250 MHz and 10.7–11.7, 15.1365–15.35, 15.4–15.7, 22.5–22.55, 24–24.05, 31.0–31.3, 31.8–32.0, 40.5–42.5, 84–86, 102–105, 116–126, 151–164, 176.5–182, 185–190, 231–235, 252–265 GHz, applicants for airborne or space station assignments are urged to take all practicable steps to protect radio astronomy observations in the adjacent lands from harmful interference; however, US74 applies.

US212 The use of the carrier frequency 4383.8 kHz (assigned frequency 4385.2 kHz),



maximum power 150 watts peak envelope power, may be authorized to non-Government stations in the amateur, fixed and mobile services, and to Government stations, in the State of Alaska for emergency communications. No airborne operations will be permitted on this frequency. Additionally, all stations operating on this frequency must be located in or within 50 nautical miles of the State of Alaska.

US213 The frequency 122.925 MHz is for use only for communications with or between aircraft when coordinating natural resources programs of Federal or State natural resources, agencies, including forestry management and fire suppression, fish and game management and protection and environmental monitoring and protection.

US214 The frequency 157.1 MHz is the primary frequency for liaison communications between ship stations and stations of the United States Coast Guard.

US215 Emissions from microwave ovens manufactured on and after January 1, 1980, for operation on the frequency 915 MHz must be confined within the band 902-928 MHz. Emissions from microwave ovens manufactured prior to January 1, 1980, for operation on the frequency 915 MHz must be confined within the band 902-940 MHz. Radiocommunications services operating in the band 928-940 MHz must accept any harmful interference from the operation of microwave ovens manufactured before January 1, 1980.

US216 The frequencies 150.775 and 150.790, and the bands 152-152.0150, 163.2375-163.2625, 462.9375-463.1875 and 467.9375-468.1875 MHz are authorized for Government/non-Government operations in medical radio communications systems.

US217 Pulse-ranging radiolocation systems may be authorized for Government and non-Government use in the 420-450 MHz band along the shorelines of Alaska and the contiguous 48 states. Spread spectrum radiolocation systems may be authorized in the 420-435 MHz portion of the band for operation within the contiguous 48 States and Alaska. Authorizations will be granted on a case-by-case basis; however, operations proposed to be located within the zones set forth in US228 should not expect to be accommodated. All stations operating in accordance with this provision will be secondary to stations operating in accordance with the Table of Frequency Allocations.

US218 The bands segments 902-912 MHz and 918-923 MHz are available for Automatic Vehicle Monitoring (AVM) Systems subject to not causing harmful interference to the operation of Government stations authorized in these bands. These systems must tolerate any interference from the operation of industrial, scientific, and medical (ISM) devices and the operation of Government stations authorized in these bands.

US219 In the band 2025-2110 MHz Government Earth resources satellite Earth stations in the Earth exploration-satellite service may be authorized to use the frequency 2106.4 MHz for Earth-to-space transmission for tracking, telemetry, and telecommand at the sites listed below. Such transmissions shall not cause harmful interference to non-Government operations:

Sioux Falls, South Dakota, 43°32'03.1" N., 96°45'42.8" W.  
Fairbanks, Alaska, 64°58'36.6" N., 147°30'54.2" W.

US220 The frequencies 36.25 and 41.71 MHz may be authorized to Government stations and non-Government stations in the petroleum radio service, for oil spill containment and cleanup operations. The use of these frequencies for oil spill containment or cleanup operations is limited to the inland and coastal waterway regions.

US221 Use of the mobile service in the bands 525-535 kHz and 1605-1615 kHz is limited to distribution of public service information from travelers information stations operating on 530 or 1610 kHz.

US222 In the band 2025-2035 MHz geostationary operational environmental satellite Earth stations in the space research and Earth exploration-satellite services may be authorized on a coequal basis for Earth-to-space transmissions for tracking, telemetry, and telecommand at the sites listed below:  
Wallops Is., Va. 37°50'48" N., 75°27'33" W.  
Seattle, Wash. 47°34'15" N., 122°33'10" W.  
Honolulu, Hawaii 21°21'12" N., 157°52'36" W.

US223 Within 75 miles of the United States/Canada border on the Great Lakes and Saint Lawrence Seaway, use of coast transmit frequency 162.025 MHz and ship station transmit frequency 157.425 MHz (VHF maritime mobile service channel 88) may be authorized for use by the maritime mobile service for public correspondence.

US224 Government systems utilizing spread spectrum techniques for terrestrial communication, navigation and identification may be authorized to operate in the band 960-1215 MHz on the condition that harmful interference will not be caused to the aeronautical radionavigation service. These systems will be handled on a case-by-case basis. Such systems shall be subject to a review at the national level for operational requirements and electromagnetic compatibility prior to development, procurement or modification.

US225 In addition to its present Government use, the frequency band 510-525 kHz is available to Government and non-Government aeronautical radionavigation stations inland of the Territorial Base Line as coordinated with the military services. In addition, the frequency 510 kHz is available for non-Government ship-helicopter operations when beyond 100 nautical miles from shore and required for aeronautical radionavigation.

US226 In the State of Hawaii, stations in the aeronautical radionavigation service shall not cause harmful interference to U.S. Navy reception from its station at Honolulu on 198 kHz.

US228 Applicants for operation in the band 420 to 450 MHz under the provisions of US217 should not expect to be accommodated if their area of service is within the following geographic areas:

(a) All areas listed in Footnote US7.  
(b) In the State of Massachusetts within a 160 kilometers (100 miles) radius around the locations of Otis Air Force Base, Massachusetts (latitude 41°45' North, longitude 70°32' West).

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

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

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

(f) Those portions of Texas and New Mexico bounded on the south by latitude 31° 45' North, on the east by longitude 104°00' West, on the north by latitude 34°30' North, and on the West by longitude 107°30' West.

US229 Assignments to stations in the fixed and mobile services may be made on the condition that no harmful interference is caused to the Navy SPASUR system currently operating in the southern United States in the frequency band 216.88-217.08 MHz.

US231 When an assignment cannot be obtained in the bands between 200 and 525 kHz, which are allocated to aeronautical radionavigation, assignments may be made to aeronautical radiobeacons in the maritime mobile band 435-490 kHz, on a secondary basis, subject to the coordination and agreement of those agencies having assignments within the maritime mobile band which may be affected. Assignments to aeronautical radionavigation radiobeacons in the band 435-490 kHz shall not be a bar to any required changes to the maritime mobile radio service and shall be limited to Government not employing voice emissions.

US232 The frequency 518 kHz may be used by coast stations operated by the U.S. Coast Guard for the transmission of meteorological and navigational warnings to ships by means of narrow-band direct-printing telegraphy.

US234 In the band 14.4-14.5, all Government fixed and mobile stations, effective December 31, 1981, shall be on a secondary basis to stations in the non-Government fixed-satellite service. Exceptionally, the Government operations listed below, which were in existence on December 31, 1981, may continue to operate on a coequal primary basis with stations in the non-Government fixed-satellite service until December 31, 1986.

| Operation            | Points of communication                                            |
|----------------------|--------------------------------------------------------------------|
| Point Mugu, CA.....  | From 34°07'N., 119°07'W. to 34°00'N., 119°38'W.                    |
| Fort Bragg, NC.....  | From 35°08'N., 79°05'W. to 35°10'N., 79°01'W.                      |
| Vandenberg, CA.....  | Transportable terminals within 25 km radius of 34°44'N., 120°35'W. |
| Bolling AFB, DC..... | Transportable terminals within 25 km radius of 38°50'N., 77°01'W.  |

US235 Until implementation procedures and schedules are determined by future conferences of the International Telecommunication Union, the bands 9775-9900, 11650-11700, 11975-12050, 13600-13800, 15450-15600, 17550-17700 and 21750-21850 kHz, to be implemented by the broadcasting service and the bands 12230-12330, 16360-16460, 17360-17410, 18780-18900, 19680-19800,



22720-22855, 25110-25210, and 26100-26175 kHz, to be implemented by the maritime mobile service, are allocated as an alternative allocation to the fixed service.

US236 Until implementation procedures and schedules are determined by future conferences of the International Telecommunication Union, the bands 4000-4063 and 8100-8195 kHz are also allocated on a primary basis to the fixed service.

US237 Until implementation procedures and schedules are determined by a future Regional Conference of the International Telecommunication Union, the band 1615-1625 kHz is also allocated on a primary basis to the radiolocation service.

US238 Until implementation procedures and schedules are determined by a future Regional Conference of the International Telecommunication Union, the band 1625-1705 kHz is allocated to the radiolocation service on a primary basis as a different category of service.

US239 Aeronautical radionavigation stations (radiobeacons) may be authorized, primarily for off-shore use, in the band 525-535 kHz on a non-interference basis to travelers information stations.

US240 The bands 1715-1725 and 1740-1750 kHz are allocated on a primary basis and the bands 1705-1715 kHz and 1725-1740 kHz on a secondary basis to the aeronautical radionavigation service, (radiobeacons).

US241 On the condition that harmful interference is not caused to the maritime mobile service, frequencies in the band 8195-8815 kHz may be used exceptionally by fixed stations communicating only within the United States and its possessions with a mean power not exceeding 250 watts.

US243 In the band 220-225 MHz, stations in the radiolocation service have priority until 1 January 1990.

US244 Until 1 January 1990, the band 136-137 MHz is allocated as an alternative allocation to the space operation (space-to-earth), meteorological-satellite service (space-to-earth) and the space research service (space-to-earth) on a primary basis. After 1 January 1990, no new assignments will be made to the above space services and existing stations will become secondary to the aeronautical mobile (R) service stations as the latter service is introduced in the band.

US245 The fixed-satellite service is limited to international inter-continental systems and subject to case-by-case electromagnetic compatibility analysis.

US246 No stations will be authorized to transmit in the bands 608-614 MHz, 1400-1427 MHz, 1660.5-1668.4 MHz, 2690-2700 MHz, 4990-5000 MHz, 10.68-10.70 GHz, 15.35-15.40 GHz, 23.8-24.0 GHz, 31.3-31.8 GHz, 51.4-54.25 GHz, 58.2-59.0 GHz, 64-65 GHz, 86-92 GHz, 100-102 GHz, 105-116 GHz, 164-168 GHz, 182-185 GHz and 217-231 GHz.

US247 The band 10100-10150 kHz is allocated to the fixed service on a primary basis outside the United States and possessions. Transmissions of stations in the amateur service shall not cause harmful interference to this fixed service use and stations in the amateur service shall make all necessary adjustments (including termination of transmission) if harmful interference is caused.

US248 Until reaccommodation actions of the International Telecommunication Union are completed, the bands 18068-18168 kHz and 24890-24990 kHz are allocated as an alternative allocation to the fixed service. In the interim, assignments to stations in the fixed service shall be made in accordance with the policy set forth in 8.2.13 of the NTIA Manual of Regulations and Procedures and Part 2, Section 2.102(h) of the FCC Rules and Regulations. However, assignments to the fixed service in these bands shall be terminated no later than 1 July 1989.

US249 The band 25550-25600 kHz is allocated as an alternative allocation to the fixed and mobile, except aeronautical mobile, services until 1 January 1985. Assignments to stations in these services in this band shall be terminated no later than 1 January 1985.

US251 The band 12.75-13.25 GHz is also allocated to the space research, (deep space) (space-to-earth) service for reception only at Goldstone, California. 35°18' N. 116°54' - W.

US252 The bands 2110-2120, 7145-7190 MHz, and 34.2-34.7 GHz are also allocated for earth-to-space transmissions in the space research service, limited to deep space communications at Goldstone, California.

US253 In the band 2300-2310 MHz, the fixed and mobile services shall not cause harmful interference to the amateur service.

US254 In the band 18.6-18.8 GHz the fixed and mobile services shall be limited to a maximum equivalent isotropically radiated power of +35 dBW and the power delivered to the antenna shall not exceed -3 dBW.

US255 In the band 18.6-18.8 GHz the fixed satellite service shall be limited to a power flux density at the Earth's surface of -101 dBW/M<sup>2</sup> in a 200 MHz band for all angles of arrival.

US256 Radio astronomy observations may be made in the band 1718.8-1722.2 MHz on an unprotected basis. Agencies providing other services in this band in the geographic areas listed below should bear in mind that their operations may affect those observations, and those agencies are encouraged to minimize potential interference to the observations in so far as it is practicable.

National Astronomy and Ionosphere Center, Arecibo, Puerto Rico

Rectangle between latitudes 17°30' N. and 19°00' N. and between longitudes 65°10' W. and 68°00' W.

Haystack Radio Observatory, Tyngsboro, Massachusetts

Rectangle between latitudes 41°00' N. and 43°00' N. and between longitudes 71°00' W. and 73°00' W.

National Radio Astronomy Observatory, Green Bank, West Virginia

Rectangle between latitudes 37°00' N. and 39°15' N. and longitudes 78°30' W. and 80°30' W.

National Radio Astronomy Observatory, Socorro, New Mexico

Rectangle between latitudes 32°30' N. and 35°30' N. and between longitudes 106°00' W. and 109°00' W.

Owens Valley Radio Observatory, Big Pine, California

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 longitudes 118°00' W. and 118°50' W.

Hat Creek Observatory, Hat Creek, California

Rectangles between latitudes 40°00' N. and 42°00' N. and between longitudes 120°15' W. and 122°15' W.

US257 Radio astronomy observations may be made in the 4950-4990 MHz band at certain Radio Astronomy Observatories indicated below:

Hat Creek Observatory, Hat Creek, California

Rectangle between latitudes 40°00' N. and 42°00' N. and between longitudes 120°15' W. and 122°15' W.

Owens Valley Radio Observatory, Pine, California

Two contiguous rectangles, Big one between latitudes 36°00' N. and 37°00' N. and longitudes 117°40' W. and 118°30' W. and the second between latitudes 37°00' N. and 38°00' N. and longitudes 118°00' W. and 118°50' W.

Haystack Radio Observatory, Tyngsboro, Massachusetts

Rectangle between latitudes 41°00' N. and 43°00' N. and between longitudes 71°00' W. and 73°00' W.

National Astronomy and Ionosphere Center, Arecibo, Puerto Rico

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, New Mexico

Rectangle between latitudes 32°30' N. and 35°30' N. and longitudes 106°00' W. and 109°00' W.

National Radio Astronomy Observatory, Green Bank, West Virginia

Rectangle between latitudes 37°30' N. and 39°15' N. and longitudes 78°30' W. and 80°30' W.

Every practicable effort will be made to avoid the assignment of frequencies in the band 4950-4990 MHz to stations in the fixed and mobile services within the geographic areas given above. In addition, every practicable effort will be made to avoid the assignment of frequencies in this band 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.

US258 In the band 8025-8400 MHz, the non-Government earth exploration-satellite service (space-to-earth) is allocated on a primary basis. Authorizations are subject to a case-by-case electromagnetic compatibility analysis.

US259 Stations in the radiolocation service in the band 17.3-17.7 GHz, shall be restricted to operating powers of less than 51 dBW eirp after feeder link stations for the broadcasting-satellite service are authorized and brought into use.

US260 Aeronautical mobile communications which are an integral part of



aeronautical radionavigation systems may be satisfied in the bands 1559-1626.5 MHz, 5000-5250 MHz and 15.4-15.7 GHz.

US261 The use of the band 4200-4400 MHz by the aeronautical radionavigation service is reserved exclusively for airborne radio altimeters. Experimental stations will not be authorized to develop equipment for operational use in this band other than equipment related to altimeter stations. However, passive sensing in the earth-exploration satellite and space research services may be authorized in this band on a secondary basis (no protection is provided from the radio altimeters).

US262 The band 31.8-32.3 GHz is also allocated for space-to-earth transmissions in the space research service, limited to deep space communications at Goldstone, California.

US263 In the frequency bands 21.2-21.4, 22.21-22.5, 36-37, 50.2-50.4, 54.25-58.2, 116-126, 150-151, 174.5-176.5, 200-202 and 235-238 GHz, the space research and earth exploration-satellite services shall not receive protection from the fixed and mobile services operating in accordance with the Table of Frequency Allocations.

US264 In the band 48.94-49.04 GHz, airborne stations shall not be authorized.

US265 In the band 10.6-10.68 GHz, the fixed service shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed -3dBW per 250 kHz.

US266 Licensees in the public safety radio services holding a valid authorization on June 30, 1958, to operate in the frequency band 156.27-157.47 MHz or on the frequencies 161.85, 161.91 or 161.97 MHz may, upon proper application, continue to be authorized for such operation, including expansion of existing systems, until such time as harmful interference is caused to the operation of any authorized station other than those licensed in the public safety radio service.

US267 In the band 902-928 MHz, amateur radio stations shall not operate within the States of Colorado and Wyoming, bounded by the area of: latitude 39°N. to 42°N. and longitude 103°W. to 108°W.

US268 The bands 890-902 MHz and 928-942 MHz are also allocated to the radiolocation service for Government ship stations (off-shore ocean areas) on the condition that harmful interference is not caused to non-Government land mobile stations. The provisions of footnote US116 apply.

US269 In the band 2500-2690 MHz, applicants for space station assignments are urged to take all practicable steps to protect radio astronomy observations in the adjacent band, 2690-2700 MHz, from harmful interference. Further, all applicants are urged to coordinate their proposed system through the Electromagnetic Management Unit, National Science Foundation, Washington, D.C. 20550, prior to system development.

US270 The band 72.77-72.91 GHz is also allocated to the radio astronomy service. Applicants for frequency assignments in this band are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

US271 The use of the band 17.3-17.8 GHz by the fixed-satellite service (earth-to-space)

is limited to feeder links for broadcasting-satellite service.

US272 The allocation to the maritime mobile-satellite service in the band 1530-1535 MHz shall be effective from 1 January 1990. Up to that date the allocation to the mobile service will be on a primary basis.

US273 In the 74.6-74.8 MHz and 75.2-75.4 MHz bands stations in the fixed and mobile services are limited to a maximum power of 1 watt from the transmitter into the antenna transmission line.

US274 In the 216-220 MHz band fixed, aeronautical mobile and land mobile stations are limited to telemetering and associated telecommand operations.

US275 The band 902-928 MHz is allocated on a secondary basis to the amateur service subject to not causing harmful interference to the operations of Government stations authorized in this band or to Automatic Vehicle Monitoring (AVM) systems. Stations in the amateur service must tolerate any interference from the operations of industrial, scientific and medical (ISM) devices, AVM systems and the operations of Government stations authorized in this band.

US276 Use of the band 2310-2390 MHz by the mobile service is limited to aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles, or major components thereof. Exceptionally all other mobile telemetering uses shall be secondary.

US277 The band 10.6-10.68 GHz is also allocated on a primary basis to the radio astronomy service. However, the radio astronomy service shall not receive protection from stations in the fixed service which are licensed to operate in the one hundred most populous urbanized areas as defined by the U.S. Census Bureau. The following radio astronomy sites have been coordinated for observations in this band: National Radio Astronomy Observatory, Green Bank, West Virginia; (38°26'08"N.; 79°49'42"W.) National Radio Astronomy Observatory, Socorro, New Mexico; (34°04'43"N.; 107°37'04"W.) Harvard Radio Astronomy Station, Fort Davis, Texas; (30°38'08"N.; 103°56'42"W.) Hat Creek Observatory, Hat Creek, California; (40°49'03"N.; 121°28'24"W.) Owens Valley Radio Observatory, Big Pine, California; (37°13'54"N.; 118°17'36"W.) Naval Research Laboratory, Maryland Point, Maryland (38°22'26"N.; 77°14'00"W.).

US278 In the 22.55-23.55 and 32-33 GHz bands non-geostationary intersatellite links may operate on a secondary basis to geostationary intersatellite links.

US279 The frequency 2182 kHz may be authorized to fixed stations associated with the maritime mobile service for the sole purpose of transmitting distress calls and distress traffic, and urgency and safety signals and messages.

US280 The frequency 6147.5 kHz may be authorized for simplex operation by non-Government coast and ship radiotelephone stations operating in the Mississippi River system on the condition that harmful interference shall not be caused to stations operating in accordance with the Table of Frequency Allocations.

US281 In the band 25.07-25.11 MHz non-Government stations in the industrial radio

services shall not cause harmful interference to, and must accept interference from, stations in the maritime mobile service operating in accordance with the International Table of Frequency Allocations.

US282 In the band 4650-4700 kHz frequencies may be authorized for non-Government communication with helicopters in support of off-shore drilling operations on the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

US283 In the bands 2850-3025 kHz, 3400-3500 kHz, 4650-4700 kHz, 5450-5680 kHz, 6525-6685 kHz, 10005-10100 kHz, 11275-11400 kHz, 13260-13360 kHz and 17900-17970 kHz frequencies in these bands may be authorized for non-Government flight test purposes on the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

US284 The carrier frequencies 6451.9 and 6455.0 kHz may be authorized to non-Government ship telephone and coast telephone stations operating in the Mississippi River maritime mobile service system on the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations and that any interference from such services must be accepted.

US285 Under exceptional circumstances, the frequencies 2638 and 2738 kHz may be authorized to coast stations.

US286 In the bands 2900-3100 MHz and 5470-5600 MHz the use of shipborne transponder systems shall be confined to the subbands 2930-2950 MHz and 5470-5480 MHz.

US287 The band 14-14.5 GHz is also allocated to the non-Government land mobile-satellite service (earth-to-space) on a secondary basis.

US288 The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the bands concerned.

US290 In the band 1900-2000 kHz amateur stations may continue to operate on a secondary basis to the radiolocation service, and in accordance with NC15, pending a decision as to their disposition through a future rule making proceeding in conjunction with the implementation of the standard broadcasting service in the 1625-1705 kHz band.

US291 Television pickup stations in the mobile service may be authorized to use frequencies in the band 38.6-40 GHz on a secondary basis to stations operating in accordance with the Table of Frequency Allocations.

US292 In the band 14.0-14.2 GHz stations in the radionavigation service shall operate on a secondary basis to the fixed-satellite service.



US293 The band 21850-21870 kHz is allocated as an alternative allocation to the radio astronomy service until 1 January 1985.

US294 In the spectrum below 490 kHz electric utilities operate Power Line Carrier (PLC) systems on power transmission lines for communications important to the reliability and security of electric service to the public. These PLC systems operate under the provisions of Part 15 of the Federal Communications Commission's Rules and Regulations or Chapter 7 of the National Telecommunications and Information Administration's Manual of Regulations and Procedures for Federal Radio Frequency Management, on an unprotected and noninterference basis with respect to authorized radio users. Notification of intent to place new or revised radio frequency assignments or PLC frequency uses in the bands below 490 kHz is to be made in accordance with the Rules and Regulations of the FCC and NTIA, and users are urged to minimize potential interference to the degree practicable. This footnote does not provide any allocation status to PLC radio frequency uses.

US296 In the bands designated for Ship wideband telegraphy, facsimile and special transmission systems, the following assignable frequencies are available to non-Government stations on a shared basis with Government stations: 2070.5, 2072.5, 2074.5, 2076.5, 4160.6, 4168, 6238.6, 6242.6, 6326, 8341.5, 12485, 12489, 16654, 16658, 22186 and 22190 kHz.

US297 The bands 47.2-49.2 GHz and 74.0-75.5 GHz are also available for feeder links for the broadcasting-satellite service.

US298 Channels 27555, 27615, 27635, 27655, 27765, and 27860 kHz are available to eligibles in the Forest Products Radio Service on a secondary basis to Government operations including experimental stations. Operations in the Forest Products Radio Service on these channels will not exceed 150 watts and are limited to the states of Washington, Oregon, Maine, North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas (eastern portion).

#### Non-Government Footnotes

(These footnotes, each consisting of the letters "NG" followed by one or more digits, denote stipulations applicable only to the non-Government.)

NG2 Facsimile broadcasting stations may be authorized in the band 88-108 MHz.

NG3 Control stations in the domestic public mobile radio service may be authorized frequencies in the band 72-73 and 75.4-76 MHz on the condition that harmful interference will not be caused to operational fixed stations.

NG4 The use of the frequencies in the band 152.84-153.38 MHz may be authorized, in any area, to remote pickup broadcast base and mobile stations on the condition that harmful interference will not be caused to stations operating in accordance with the Table of Frequency Allocations.

NG6 Stations in the public safety radio services authorized as of June 30, 1958, to use frequencies in the band 159.51-161.79 MHz in areas other than Puerto Rico and the Virgin

Islands may continue such operation, including expansion of existing systems, on the condition that harmful interference will not be caused to stations in the services to which these bands are allocated. In Puerto Rico and the Virgin Islands this authority is limited to frequencies in the band 160.05-161.37 MHz. No new public radio service system will be authorized to operate on these frequencies.

NG12 Frequencies in the bands 454.40-455 MHz and 459.40-460 MHz may be assigned to domestic public land and mobile stations to provide a two-way air-ground public radiotelephone service.

NG15 The Amateur Service may use the sections of the band 1900 to 2000 kHz which

are not required for LORAN-A in accordance with the following conditions:

(1) The use of these frequencies by the Amateur Service shall not be a bar to the expansion of the radionavigation (LORAN-A) service;

(2) The Amateur Service shall not cause harmful interference to the radionavigation (LORAN-A) service;

(3) Only types A1A (A1) and amplitude modulated double and single sideband telephony emission shall be employed.

(4) Amateur operation shall be limited to the maximum transmitter peak envelope power output values specified below:

| States of—                                                                                                                                                                                                                                | Maximum transmitter peak envelope power output in watts |              |              |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------|--------------|--------------|
|                                                                                                                                                                                                                                           | 1900-1925kHz                                            | 1925-1950kHz | 1950-1975kHz | 1975-2000kHz |
|                                                                                                                                                                                                                                           | Day /night                                              | Day /night   | Day /night   | Day /night   |
| Maine, Massachusetts, New Hampshire, Rhode Island, Connecticut, Delaware, Maryland, New Jersey, New York, Pennsylvania, Vermont, District of Columbia, Kentucky, North Carolina, Ohio, South Carolina, Tennessee, Virginia, West Virginia | 150/35                                                  | 0            | 0            | 150/35       |
| Florida, Georgia, Illinois, Indiana, Michigan, Wisconsin, Alabama, Arkansas, Iowa, Minnesota, Mississippi, Missouri                                                                                                                       | 300/75                                                  | 0            | 0            | 300/75       |
| The remainder of the states and territories                                                                                                                                                                                               | 750/150                                                 | 0            | 0            | 750/150      |
|                                                                                                                                                                                                                                           | 750/150                                                 | 150/35       | 150/35       | 750/150      |
|                                                                                                                                                                                                                                           | 1500/300                                                | 300/75       | 300/75       | 1500/300     |
|                                                                                                                                                                                                                                           | 1500/300                                                | 1500/300     | 1500/300     | 1500/300     |

(b) This footnote is applicable up through January 1, 1984 and shall be considered as temporary until that time in the sense that it shall remain subject to cancellation or to revisions, in whole or in part, by order of the Commission without hearing whenever the Commission shall deem such cancellation or revision to be necessary or desirable, in the light of the priority within this band of the LORAN-A system or radionavigation.

NG17 Stations in the land transportation radio services authorized as of May 15, 1958 to operate on the frequency 161.61 MHz may, upon proper application, continue to be authorized for such operation, including expansion of existing systems, on the condition that harmful interference will not be caused to the operation of any authorized station in the maritime mobile service. No new land transportation radio service system will be authorized to operate on 161.61 MHz.

NG19 Fixed stations associated with the maritime mobile service may be authorized, for purposes of communication with coast stations, to use frequencies assignable to ship stations in this band on the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

NG23 Frequencies in the band 2100-2200 MHz may also be assigned to stations in the international fixed public radio service located south of 25°30' north latitude in the State of Florida and in U.S. Possessions in the Caribbean area, provided, however, no new assignments in the band 2150-2162 MHz will be made to such stations after February 25, 1974.

NG28 The frequency band 160.86-161.40 MHz is available for assignment to remote pickup base and remote pickup mobile stations in Puerto Rico and the Virgin Islands only on a shared basis with the land transportation radio service.

NG30 Stations in the international fixed public radiocommunication service in Florida, south of 25°30' north latitude, may be authorized to use frequencies in the band 716-890 MHz on the condition that harmful interference will not be caused to the broadcasting service of any country. This is an interim allocation the termination of which will later be specified by the Commission when it is determined that equipments are generally available for use in bands allocated internationally to the fixed service.

NG41 Frequencies in the bands 3700-4200 MHz, 5925-6425 MHz, and 10.7-11.7 GHz may also be assigned to stations in the international fixed public and international control services located in U.S. Possessions in the Caribbean area.

NG42 Non-Government stations in the radiolocation service shall not cause harmful interference to the amateur service.

NG43 Fixed stations in the domestic public radio services in Alaska, south of 56° north latitude and east of 134° west longitude, may be authorized to use frequencies in the band 800-830 MHz, on the condition that harmful interference will not be caused to the broadcasting service of any country.

NG47 In the band 2500-2690 MHz, channels in 2500-2686 MHz, and the corresponding response frequencies 2686.0625-2689.8125 MHz, may be assigned to stations in the Instructional Television Fixed Service (Part 74 of this Chapter, CFR 47); channels in 2596-2644 MHz and response frequencies 2686.5625-2689.6875 MHz may be assigned to Multipoint Distribution Service stations (Part 21 of this Chapter CFR 47); and channels 2650-2656 MHz, 2662-2668 MHz and 2674-2680 MHz and response frequencies 2686.9375 MHz, 2687.9375 MHz and 2688.9375 MHz may be assigned to stations in the



Operational Fixed Service (Part 94 of this Chapter, CFR 47). In Alaska, however, frequencies within the band 2655-2690 MHz are not available for assignment to terrestrial stations.

NG49 The following frequencies may be authorized on a secondary basis for low-power (1 watt input) mobile operations in the Manufacturers Radio Service subject to the condition that no interference is caused to the reception of television stations operation on channels 4 and 5 and that their use is limited to a manufacturing facility:

| MHz   |       |       |
|-------|-------|-------|
| 72.02 | 72.16 | 72.30 |
| 72.04 | 72.18 | 72.32 |
| 72.06 | 72.20 | 72.34 |
| 72.08 | 72.22 | 72.36 |
| 72.10 | 72.24 | 72.38 |
| 72.12 | 72.26 | 72.40 |
| 72.14 | 72.28 |       |

Further, the following frequencies may be authorized on a primary basis for mobile operations in the Special Industrial Radio Service, Manufacturers Radio Service, and Railroad Radio Service subject to the condition that no interference is caused to the reception of television stations operating on channels 4 and 5; and that their use is limited to a railroad yard, manufacturing plant, or similar industrial facility.

| MHz   |       |       |
|-------|-------|-------|
| 72.44 | 72.60 | 75.56 |
| 72.48 | 75.44 | 75.60 |
| 72.52 | 75.48 |       |
| 72.56 | 75.52 |       |

NG51 In Puerto Rico and the Virgin Islands only, the bands 150.8-150.98 MHz and 150.98-151.49 MHz are allocated exclusively to the business radio service.

NG53 In the band 12.7-13.15 GHz, television pickup stations and CARS pickup stations shall be assigned channels on a co-equal basis and shall operate on a secondary basis to fixed stations operating in accordance with the Table of Frequency Allocations. In the 13.15-13.20 GHz band television pickup stations and CARS pickup stations shall be assigned on an exclusive basis in the top one hundred markets, as set out in Section 76.51.

NG56 In the bands 72.0-73.0 and 75.4-76.0 MHz, the use of mobile radio remote control of models is on a secondary basis to all other fixed and mobile operations. Such operations are subject to the condition that interference will not be caused to common carrier domestic public stations, to remote control of industrial equipment operating in the 72-76 MHz band, or to the reception of television signal on channels 4 (66-72 MHz) or 5 (76-82 MHz). Television interference shall be considered to occur whenever reception of regularly used television signals is impaired or destroyed, regardless of the strength of the television signal or the distance to the television station.

NG59 The frequencies 37.60 and 37.85 MHz may be authorized only for use by base, mobile, and operational fixed stations participating in an interconnected or coordinated power service utility system.

NG63 Television Broadcast translator stations holding valid licenses on November 15, 1971, to operate in the frequency band

806-890 MHz (channels 70-83), may continue to operate in this band, pursuant to periodic license renewals, on a secondary basis to the land mobile radio service.

NG64 Broadcast auxiliary stations licensed as of July 10, 1970, to operate in the frequency band 942-947 MHz may continue to so operate pending a decision as to their disposition through a future rule making proceeding.

NG66 The frequency band 470-512 MHz is allocated for use in the broadcasting and land mobile radio services. In the land mobile services it is available for assignment in the domestic public, public safety, industrial, and land transportation radio services at, or in the vicinity of 13 urbanized areas of the United States, as set forth in the table below, and subject to the standards and conditions set forth in Parts 22 and 90 of this chapter, CFR 47.

| Urbanized area                     | TV channel |
|------------------------------------|------------|
| New York-Northeastern New Jersey   | 14, 15     |
| Los Angeles                        | 14, 20     |
| Chicago-Northwestern Indiana       | 14, 15     |
| Philadelphia, Pa.-New Jersey       | 19, 20     |
| Detroit, Michigan                  | 15, 16     |
| San Francisco-Oakland, California  | 16, 17     |
| Boston, Mass.                      | 14, 16     |
| Washington, D.C.-Maryland-Virginia | 17, 18     |
| Pittsburgh, Pa.                    | 14, 18     |
| Cleveland, Ohio                    | 14, 15     |
| Miami, Florida                     | 14         |
| Houston, Texas                     | 17         |
| Dallas, Texas                      | 16         |

NG70 In Puerto Rico and the Virgin Islands only, the bands 159.240-159.435 and 160.410-160.620 MHz are also available for assignment to base stations and mobile stations in the special industrial radio service.

NG101 The use of the band 2500-2690 MHz by the broadcasting-satellite service is limited to domestic and regional systems for community reception of educational television programming and public service information. Such use is subject to agreement among administrations concerned and those having services operating in accordance with the table, which may be affected. Unless such agreement includes the use of higher values, the power flux density at the earth's surface produced by emissions from a space station in this service shall not exceed those values set forth in Part 73 of the rules for this frequency band.

NG102 The frequency bands 2500-2655 MHz (space-to-earth) and 2655-2690 MHz (earth-to-space) are allocated for use in the fixed-satellite service as follows:

(a) For common carrier use in Alaska, for intra-Alaska service only, and in the mid and western Pacific areas including American Samoa, the Trust Territory of the Pacific Islands, Guam and Hawaii;

(b) For educational use in the contiguous United States, Alaska and the mid and western Pacific areas including American Samoa, the Trust Territory of the Pacific Islands, Guam and Hawaii.

Such use is subject to agreement with administrations having services operating in accordance with the table, which may be affected. In the band 2500-2655 MHz, unless

such agreement includes the use of higher values, the power flux density at the earth's surface produced by emissions from a space station in this service shall not exceed the values set forth in Part 25 of the Rules for this frequency band.

NG104 The use of the bands 10.7-11.7 and 12.75-13.25 GHz in the fixed-satellite service is limited to international systems, i.e., other than domestic systems.

NG111 The band 157.4375-157.4625 MHz may be used for one way paging operations in the special emergency radio service.

NG112 The frequencies 25.04, 25.08, 150.980, 154.585, 158.445, 159.480, 454.000 and 459.000 MHz may be authorized to stations in the petroleum radio service for use primarily in oil spill containment and cleanup operations and secondarily in regular land mobile communication.

NG114 In the offshore Louisiana gulf coast area, the band 488-494 MHz (TV Channel 17) is allocated to the domestic public and industrial radio services in accordance with the regulation set forth in Part 22 and 90, respectively.

NG115 In the 174 to 216 MHz band wireless microphones may be authorized to operate on a secondary, non-interfering basis, subject to terms and conditions set forth in Part 74 of these Rules and Regulations.

NG117 The frequency 156.050 and 156.175 MHz may be assigned to stations in the maritime mobile service for commercial and port operations in the New Orleans Vessel Traffic Service (VTS) area and the frequency 156.250 MHz may be assigned to stations in the maritime mobile service for port operating in the New Orleans and Houston VTS areas.

NG118 Television translator relay stations may be authorized to use frequencies in this band on a secondary basis to stations operating in accordance with the Table of Frequency Allocations.

NG120 Frequencies in the 928-929 and 952-960 MHz bands may be assigned for multiple address systems as specified in Part 94.

NG121 In the band 216-220 MHz, the maritime mobile service is limited to operation along the Mississippi River and connecting waterways, and the Gulf Intracoastal Waterway.

NG122 Television Pickup stations may be authorized under Part 74 in the 6425-6525 MHz band on a secondary basis to stations operating in accordance with the Table of Frequency Allocations.

NG124 In the public safety radio service allocations within the bands 30-50 MHz, 150-174 MHz and 450-470 MHz, police radio service licenses are authorized to operate low powered radio transmitters on a secondary, non-interference basis in accordance with the provisions of Sections 2.803 and 90.19(f)(5) of the Rules.

NG127 In Hawaii, the frequency band 488-494 MHz is allocated exclusively to the fixed service for use by common carrier control and repeater stations for point-to-point inter-island communications only.

NG128 In the band 535-1605 kHz, AM broadcast licensees or permittees may use the AM carrier to transmit signals intended for



utility load management. In the band 88-108 MHz, FM broadcast licensees or permittees are permitted to use subcarriers on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes.

NG129 In Alaska, the bands 76-88 MHz and 88-100 MHz are also allocated to the Fixed service on a secondary basis. Broadcast stations operating in these bands shall not cause interference to non-Government fixed operations authorized prior to January 1, 1982.

NG133 Stations authorized in the band 73-74.6 MHz as of December 1, 1961 may continue to operate until December 31, 1985. Such stations shall not be required to afford protection to radio astronomy observations within the United States and possessions, however, such stations must afford protection to the observatories of other countries.

NG134 In the band 10.45-10.5 GHz non-Government stations in the radiolocation service shall not cause harmful interference to the amateur and amateur-satellite services.

NG135 In the 420-430 MHz band the amateur service is not allocated north of line A (def. § 2.1). All amateur radio stations shall operate north of line A in accordance with the Agreement between the United States and Canada.

NG139 Pending adopting of further specific rules concerning usage of the band 12.2-12.7 GHz by the fixed and broadcasting-satellite services, systems in these services may be authorized subject to the condition that adjustments in certain systems design or technical parameters may become necessary during the systems lifetime. The necessity for such adjustments, and their extent, will be dependent upon the Final Acts of the 1983 Regional Administrative Radio Conference and subsequent Commission decisions.

NG140 Pending adopting of further specific rules concerning usage of the band 17.3-17.8 GHz by the fixed-satellite service for the purpose of providing feeder links to the broadcasting-satellite service, systems may be authorized for this purpose subject to the condition that adjustments in certain systems design or technical parameters may become necessary during the system lifetime. The necessity for such adjustments, and their extent, will be dependent upon the Final Acts of the 1983 Regional Administrative Radio Conference and subsequent Commission decisions.

NG141 The frequencies 42.40 MHz and 44.10 MHz are authorized on a primary basis in the State of Alaska for meteor burst communications by fixed stations in the Rural Radio Service operating under the provisions of Part 22 of this Chapter. The frequencies 44.20 MHz and 45.90 MHz are authorized on a primary basis in Alaska for meteor burst communications by fixed private radio stations operating under the provisions of Part 90 of the Chapter. The private radio station frequencies may be used by Common Carrier stations on a secondary, noninterference basis and the Common Carrier frequencies may be used by private radio stations for meteor burst communications on a secondary, noninterference basis. Users shall cooperate to the extent practical to minimize potential

interference. Stations utilizing meteor burst communications shall not cause harmful interference to stations of other radio services operating in accordance with the Table of Frequency Allocations.

NG143 In the band 11.7-12.2 GHz protection from harmful interference shall be afforded to transmissions from space stations not in conformance with international footnote 839 only if the operations of such space stations impose no unacceptable constraints on operations or orbit locations of space stations in conformance with 839.

NG144 Stations authorized as of September 9, 1983 to use frequencies in the band 17.7-19.7 GHz may, upon proper application, continue to be authorized for such operation.

NG145 In the band 11.7-12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

#### Government (G) Footnotes

(These footnotes, each consisting of the letter "G" followed by one or more digits, denote stipulations applicable only to the Government)

G2 In the bands 216-225, 420-450 (except as provided by US217) 890-902, 928-942, 1300-1400, 2300-2450, 2700-2900, 5650-5925 and 900-9200 MHz, the Government radiolocation is limited to the military services.

G5 In the bands 162.0125-173.2, 173.4-174, 406.1-410 and 410-420 MHz, the fixed and mobile services are all allocated on a primary basis to the Government non-military agencies.

G6 Military tactical fixed and mobile operations may be conducted nationally on a secondary basis: (1) to the meteorological aids service in the band 403-406 MHz; and (2) to the radio astronomy service in the band 406.1-410 MHz. Such fixed and mobile operations are subject to local coordination to ensure that harmful interference will not be caused to the services to which the bands are allocated.

G8 Low power Government radio control operations are permitted in the band 420-450 MHz.

G11 Government fixed and mobile radio services, including low power radio control operations, are permitted in the band 902-928 MHz on a secondary basis.

G15 Use of the band 2700-2900 MHz by the military fixed and shipborne air defense radiolocation installations will be fully coordinated with the meteorological aids and aeronautical radionavigation services. The military air defense installations will be moved from the band 2700-2900 MHz at the earliest practicable date. Until such time as military air defense installations can be accommodated satisfactorily elsewhere in the spectrum, such operations will, insofar as

practicable, be adjusted to meet the requirements of the aeronautical radionavigation service.

G19 Use of the band 9000-9200 MHz by military fixed and shipborne air defense radiolocation installations will be fully coordinated with the aeronautical radionavigation service, recognizing fully the safety aspects of the latter. Military air defense installations will be accommodated ultimately outside this band. Until such time as military defense installations can be accommodated satisfactorily elsewhere in the spectrum such operations will, insofar as practicable, be adjusted to meet the requirements of the aeronautical radionavigation services.

G27 The fixed and mobile services are limited to the military service.

G30 In the bands 138-144, 148-149.9, 150.05-150.8, 225-328.6, 335.4-399.9, 1427-1429 and 1429-1435 MHz, the fixed and mobile services are limited primarily to operations by the military services.

G31 In the 3300-3500 MHz, the Government radiolocation is limited to the military services, except as provided by footnote.

G32 Except for weather radars on meteorological satellites in the band 9975-10025 MHz and for Government survey operations (see footnote US108), Government radiolocation in the band 10000-10500 MHz is limited to the military services.

G34 In the band 34.4-34.5 GHz, weather radars on board meteorological satellites for cloud detection are authorized to operate on the basis of equality with military radiolocation devices. All other non-military radiolocation in the band 33.4-36.0 GHz shall be secondary to the military services.

G42 Space command, control, range and range rate systems for earth station transmission only (including installations on certain Navy ships) may be accommodated on a co-equal basis with the fixed and mobile services in the band 1761-1842 MHz. Specific frequencies required to be used at any location will be satisfied on a coordinated case-by-case basis.

G56 Government radiolocation in the bands 1215-1300, 2900-3100, 5350-5650 and 9300-9500 MHz is primarily for the military services; however, limited secondary use is permitted by other Government agencies in support of experimentation and research programs. In addition, limited secondary use is permitted for survey operations in the band 2900-3100 MHz.

G59 In the bands 902-928 MHz, 3100-3300 MHz, 3500-3700 MHz, 5250-5350 MHz, 8500-9000 MHz, 9200-9300 MHz, 13.4-14.0 GHz, 15.7-17.7 GHz and 24.05-24.25 GHz, all Government non-military radiolocation shall be secondary to military radiolocation, except in the subband 15.7-16.2 GHz airport surface detection equipment (ASDE) is permitted on a co-equal basis subject to coordination with the military departments.

G100 The bands 235-322 MHz and 335.4-399.9 MHz are also allocated on a primary basis to the mobile-satellite service, limited to military operations.

G101 In the band 2200-2290 MHz, space operations (space-to-earth) and (space-to-



space), and earth exploration-satellite (space-to-earth) and (space-to-space) services, may be accommodated on a co-equal basis with fixed, mobile and space research services.

G104 In the bands 7450-7550 and 8175-8215 MHz, it is agreed that although the military space radio communication systems, which include earth stations near the proposed meteorological-satellite installations will precede the meteorological-satellite installations, engineering adjustments to either the military or the meteorological-satellite systems or both will be made as mutually required to assure compatible operations of the systems concerned.

G105 In the band 420-460 MHz, radio altimeter operations are limited to military services and to existing equipments which may continue to operate until January 1, 1985 on the condition that harmful interference is not caused to stations of services operating in accordance with the Table of Frequency Allocations.

G106 The bands 2501-2502, 5003-5055 kHz, 10003-10005 kHz, 15005-15010 kHz, 19990-19995 kHz, 20005-20010 kHz and 25005-25010 kHz are also allocated on a secondary basis to the space research service. The space research transmissions are subject to immediate temporary or permanent shutdown in the event of interference to the reception of the standard frequency and time broadcasts.

G109 All assignments in the band 157.0375-157.1875 MHz are subject to adjustment to other frequencies in this band as long term U.S. maritime VHF planning develops, particularly that planning incident to support of the National VHF-FM Radiotelephone Safety and Distress System (See Doc. 15624/1-1.9.111/1.9.125).

G110 Government ground-based stations in the aeronautical radionavigation service may be authorized between 3500-3700 MHz where accommodation in the 2700-2900 MHz band is not technically and/or economically feasible.

G114 In the band 1350-1400 MHz, the frequency 1381.05 MHz with emissions limited to  $\pm 12$  MHz is also allocated to fixed and mobile satellite services (space-to-earth) for the relay of nuclear burst data.

G115 In the band 13360-13410 kHz, the fixed service is allocated on a primary basis outside the conterminous United States. Within the conterminous United States, assignments in the fixed service are permitted, and will be protected for national defense purposes or, if they are to be used

only in an emergency jeopardizing life, public safety, or important property under conditions calling for immediate communication where other means of communication do not exist.

G116 The band 7125-7155 MHz is also allocated for earth-to-space transmissions in the Space Operations Service at a limited number of sites (not to exceed two), subject to established coordination procedures.

G117 In the bands 7250-7750 and 7900-8400 MHz and 20.2-21.2, 30-31, 39.5-40.5, 43.5-45.5 and 50.4-51.4 GHz the Government fixed-satellite and mobile-satellite services are limited to military systems.

G118 Government fixed stations may be authorized in the band 1700-1710 MHz only if spectrum is not available in the band 1710-1850 MHz.

G119 In the band 14714.5-15136.5 MHz, assignments in the Fixed Service which were in existence as of January 1, 1982 may continue on a primary basis until January 1, 1990.

#### **§ 2.107 Radio astronomy station notification.**

(a) Pursuant to No. 1492 of Article 13 and Section F of Appendix 3 to the international *Radio Regulations* (Geneva, 1982), operators of radio astronomy stations desiring international recognition of their use of specific radio astronomy frequencies or bands of frequencies for reception, should file the following information with the Commission for inclusion in the Master International Frequency Register:

(1) The center of the frequency band observed, in kilohertz up to 28,000 kHz inclusive, in megahertz above 28,000 kHz to 10,500 MHz inclusive and in gigahertz above 10,500 MHz.

(2) The date (actual or foreseen, as appropriate) when reception of the frequency band begins.

(3) The name and location of the station, including geographical coordinates in degrees and minutes.

(4) The width of the frequency band (in kHz) observed by the station.

(5) The antenna type and dimensions, effective area and angular coverage in azimuth and elevation.

(6) The regular hours of reception (in UTC) of the observed frequency.

(7) The overall receiving system noise temperature (in kelvins) referred to the output of the receiving antenna.

(8) The class of observations to be taken. Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

(9) The name and mailing address of the operator.

(b) The permanent discontinuance of observations, or any change to the information above, should also be filed with the Commission.

(c) Observations being conducted on frequencies or frequency bands not allocated to the radio astronomy service should be reported as in paragraph (a) of this section for information purposes. Information in this category will not be submitted for entry in the Master International Frequency Register and protection from interference will not be afforded such operations by stations in other services.

#### **§ 2.108 Policy regarding the use of the fixed-satellite allocations in the 3.6-3.7, 4.5-4.8, and 5.85-5.925 GHz Bands.**

The use of the fixed-satellite allocations in the United States in the above bands will be governed by footnote US245. Use of the fixed-satellite service allocations in these bands is for the international fixed-satellite service, that is, for international inter-continental communications. Case-by-case electromagnetic compatibility analysis is required with all users of the bands. It is anticipated that one earth station on each coast can be successfully coordinated. Specific locations of these earth stations depend upon service requirements and case-by-case EMC analyses that demonstrate compatible operations.

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