

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of )
)
Amendment of Part 2 of the Commission's Rules )
to Realign the 76-81 GHz band and the Frequency ) ET Docket No. 03-102
Range Above 95 GHz Consistent with International )
Allocation Changes )
)
Amendment of Part 2 of the Commission's Rules )
to Allocate Additional Spectrum to the Inter- ) ET Docket No. 99-261
Satellite, Fixed, and Mobile Services and to Permit )
Unlicensed Devices to Use Certain Segments in )
the 50.2-50.4 GHz and 51.4-71.0 GHz Bands )

NOTICE OF PROPOSED RULE MAKING

Adopted: April 16, 2003

Released: April 28, 2003

Comment Date: 60 days from publication in the Federal Register
Reply Comment Date: 90 days from publication in the Federal Register

By the Commission:

INTRODUCTION

1. By this Notice of Proposed Rule Making ("Notice"), we propose to reallocate spectrum in the 76-81 GHz frequency band and the frequency bands above 95 GHz to make the United States domestic and international frequency allocation changes consistent with each other in the bands above 71 GHz. The realignment of allocations that we propose herein is consistent with the international allocation changes made at the World Radiocommunication Conference (Istanbul, 2000) ("WRC-2000"). The primary intent of the WRC-2000 realignment was to place scientific services, such as the Earth-exploration satellite ("EESS") and radio astronomy ("RAS") services, in spectrum better suited to their needs. This Notice also continues our efforts to promote the development and growth of the "millimeter

1 Domestic changes for the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands were previously proposed by the Commission. See Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands, Notice of Proposed Rule Making, WT Docket No. 02-146, FCC 17 Rcd 12182, (2002) ("70/80/90 GHz Notice"). We will not consider any of the proposals or revisions made in these bands since to date the Commission has not adopted any of the proposed rules or revisions in the 70/80/90 GHz Notice. The allocations in the international table and United States table for the band 86-92 GHz already conform.

2 For example, particular bands are needed for the radio astronomy service to satisfy requirements for spectral line and wideband continuum observations.

wave” spectrum.<sup>3</sup> In addition, to protect passive services in the 55.78-56.26 GHz band, we propose to adopt the limit for maximum power spectral density that can be delivered to a fixed service transmitter antenna set forth in the United States proposal to WRC-2000. The Commission previously deferred action on adopting such a limit.<sup>4</sup> We believe that the proposals set forth herein will promote future developments in technology and equipment, position scientific services to increase our understanding of physical phenomena, and provide consumers with access to new products and communications services.

## BACKGROUND

2. The EESS (passive) includes passive radio sensing operations that have many applications in agriculture, weather forecasting, and the study of global changes of the Earth and its environment.<sup>5</sup> Passive sensing is a remote sensing technique that is based on detecting available electromagnetic energy from natural sources, such as the surface of the Earth and its atmosphere. Passive sensors detect naturally reflected or radiated energy from the Earth’s surface at some altitude above the ground and use the amount of energy emitted, transmitted, or reflected to observe and measure objects from a distance in order to determine certain physical properties of the object. Many parameters, such as temperature and water vapor profiles, and the concentration of ozone and other trace gases that are radiantly and chemically active can be measured regionally and globally only by passive sensors aboard satellites. The frequency range above 71 GHz is well suited to many of these applications due to its bandwidth and propagation characteristics.

3. Similarly, the radio astronomy service is a passive service that receives radio waves of cosmic origin to better understand our universe. The millimeter wavelength range was, until recently, one of the few spectral regions not fully explored by astronomers because of the special observing conditions and instruments required. Recently, astronomical research has become increasingly active in this spectral range, because it is particularly well suited for studies of star formation, the properties of the interstellar medium, the chemical evolution of the Universe, detection of extra-solar planets and many other phenomena. US astronomers built and operate several large single dish telescopes and interferometers operating in this spectral range. Further, a giant millimeter telescope, that is going to be the fastest and most sensitive telescope at mm and sub-mm wavelengths, is being built by the US and a consortium of European countries.

4. Almost all current spaceborne passive-sensing and radio astronomy allocations in the range 71-275 GHz were established at the 1979 World Administrative Radio Conference (“WARC-79”) and were codified in the Commission’s Rules in January 1984.<sup>6</sup> Since then, there have been many advances in our scientific understanding of passive sensing and radio astronomy and their requirements in

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<sup>3</sup> The term “millimeter wave” derives from the wavelength of radio signals at frequencies between 30 GHz and 300 GHz, which range between 1 millimeter at 300 GHz and 10 millimeters at 30 GHz.

<sup>4</sup> See *Amendment of Part 2 of the Commission’s Rules to Allocate Additional Spectrum to the Inter-Satellite, Fixed, and Mobile Services and to Permit Unlicensed Devices to Use Certain Segments in the 50.2-50.4 GHz and 51.4-71.0 GHz Bands, Report and Order* in ET Docket No. 99-261, 15 FCC Rcd 25264 (2000).

<sup>5</sup> For example, passive sensing techniques can be used to assess climate and weather changes of the Earth and its environment.

<sup>6</sup> See *Amendment of Part 2 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, Second Report and Order*, Gen Docket No. 80-739, 49 FR 2357 (January 19, 1984). Examples of passive services include remote sensing and meteorological observations; see also *Final Acts of the World Administrative Radio Conference (WARC-79)*.

terms of technology and appropriate frequency bands. The 1997 World Radiocommunication Conference (“WRC-97”) realigned allocations in the 50.2-71 GHz range in a way that allows passive services to make better use of the band while still providing spectrum for other users.<sup>7</sup> Now, passive service advocates are expressing substantial interest in using frequencies in the range above 71 GHz. In addition, proponents of active radio services<sup>8</sup> are interested in the frequency bands above 71 GHz because the available bandwidth would permit high data rate transmissions and the propagation characteristics would allow for extensive frequency reuse.<sup>9</sup> WRC-2000 reallocated spectrum above 71 GHz to ensure that the allocations in this region of the spectrum are better aligned with potential applications.<sup>10</sup>

5. Previously, the Commission proposed allocation changes for some bands above 71 GHz. In the *70/80/90 GHz Notice*, the Commission proposed to reallocate the 71-76 GHz, 81-86 GHz, 92-94 GHz and 94.1-95 GHz bands in accordance with the 1992 Final Acts of the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (“WARC-92 Final Acts”) and most of the WRC-2000 Final Acts.<sup>11</sup> In addition, the Commission proposed service rules to allow for a broad range of licensed fixed and mobile services and unlicensed uses in the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands. As discussed below, we find that the proposals of this proceeding will not impact the proposals in the *70/80/90 GHz Notice*.

6. We also note that in 1995, the 76-77 GHz band was made available for use by vehicle radar systems on an unlicensed basis under Part 15 of our Rules.<sup>12</sup> This action received significant industry support in an effort to develop collision avoidance radars for vehicles. The Commission found that the 76-77 GHz band was ideal for unlicensed collision avoidance radars because: 1) the propagation characteristics would reduce the probability of interference between vehicle radar units; 2) this band would reduce manufacturing costs; and 3) the band provided sufficient spectrum needed for tracking edges of roads and proper operation.

7. To date, few systems have been implemented in the frequency bands under consideration herein. A review of the Commission’s and Federal Government’s databases provides information about the current spectrum usage, as shown in Table 1, below.

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<sup>7</sup> See *Final Acts of the World Radiocommunication Conference (WRC-97)*.

<sup>8</sup> Active sensing is a remote sensing technique that provides its own energy source for illumination. The active sensor emits radiation which is directed toward the target to be investigated. The radiation reflected from that target is detected and measured by the sensor. See [www.sbg.ac.at/geo/idrisi/ccrs\\_tutorial/www.ccrs.nrcan.gc.ca/ccrs/eduref/tutorial/chap1/c1p6e.html#c1p6\\_i1](http://www.sbg.ac.at/geo/idrisi/ccrs_tutorial/www.ccrs.nrcan.gc.ca/ccrs/eduref/tutorial/chap1/c1p6e.html#c1p6_i1).

<sup>9</sup> The frequency above 71 GHz is characterized as having short propagation distances, narrow beamwidth, and high directivity while using small antennas. The ability to operate many highly directive antennas in an area results in high spectrum reuse and high user density.

<sup>10</sup> See *Final Acts of the World Radiocommunication Conference (WRC-2000)*.

<sup>11</sup> See *Final Acts of the World Administrative Radio Conference for Dealing with Frequency Allocations in certain Parts of the Spectrum (WARC-92)*.

<sup>12</sup> See *Amendment of Parts 2, 15, and 97 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, First Report and Order and Second Notice of Proposed Rule Making*, ET Docket No. 94-124, 11 FCC Rcd 4481 (1995).

Band (GHz)	Federal Government Authorizations	Non-Federal Government Licenses
76-81	0	8 experimentals
95-300	1 experimental 2 radio astronomy	13 experimentals
Total	1 experimental 2 authorizations	21 experimentals

The database includes Federal Government operations at two radio astronomy stations in the 95-300 GHz bands from one site. Specifically, it includes the National Science Foundation (now operated by the University of Arizona) operations of a radio astronomy observatory at Kitt Peak, AZ, which receives signals from space in the 130-170 GHz and 200-305 GHz bands. The database also includes a Federal Government assignment, through the National Aeronautics and Space Administration (NASA), to operate an experimental station centered at 245.52 GHz at Wallops Island, VA to determine the amount of rainfall contained in and around Wallops Island. It should be noted that while passive users can register their operations, they are not obligated to do so. Many of these passive operations are in bands in which emissions are prohibited so there has been minimal reason to register. Some of the NASA and NOAA passive missions onboard satellites are as follows:

Mission	Instrument	Channel Center Frequencies
AQUA	AMSR-E AMSU HSB	89 GHz 89, 183 GHz 89, 150, 183, 188 GHz
NPOESS	ATMS CMIS	89, 164, 183 GHz 89, 166, 183 GHz
JASON	JMR	201 GHz
TRMM	TMI	89 GHz
AURA	MLS	118, 190, 236, 640, 2500 GHz
NOAA-K, L, M	AMSU-A AMSU-B	89 GHz 89, 150, 183 GHz
NOAA-N, N'	AMSU-A MHS	89 GHz 89, 157, 183 GHz
NPOESS Preparatory Project	ATMS	89, 164, 183 GHz

Additionally, the following government radio astronomy sites operated or intend to operate in the near future in this range in the US&P:

10 VLBA stations – up to 100 GHz – (for a list see, e.g. US311)

In a few years (2-3) the Green Bank Telescope may operate up to 90-100 GHz

Non-Federal Government entities use spectrum above 76 GHz to conduct experimental operations, such as antenna testing, development of collision avoidance systems for automobiles, and development of point-to-point millimeter-wave systems.

## DISCUSSION

8. We initiate this proceeding at the request of the National Telecommunications and Information Administration (“NTIA”).<sup>13</sup> NTIA has completed a review of the results of WRC-2000 and

<sup>13</sup> See Letter to Acting Chief, Office of Engineering and Technology from the Associate Administrator, Office of Spectrum Management at NTIA, July 18, 2001. We note that upon staff review it was found that the primary  
(continued...)

now recommends changes to the U.S. Table of Frequency Allocations (“Table”) for frequency bands above 71 GHz based on coordination with the Interdepartment Radio Advisory Committee (“IRAC”).<sup>14</sup> The proposals in this Notice are largely based on the WRC-2000 changes and the research and planning of NTIA.

A. Reallocation of the Frequency Bands Above 76 GHz

9. The primary need for realigning spectrum above 76 GHz is to accommodate the requirements of the radio astronomy service (“RAS”) and the Earth-exploration satellite service (passive) (“EESS”).<sup>15</sup> Specifically, RAS must operate in bands that meet the requirements for spectral line<sup>16</sup> and wideband continuum observations.<sup>17</sup> Additionally, the EESS must operate in bands that are optimal for

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allocation for the radiolocation service in the 78-79 GHz and 79-81 GHz bands were left out of the Federal Government Table in NTIA’s recommendations for WRC-2000. This was an inadvertent omission and has been put back into the above mentioned bands for proposal. The Commission has been developing service rules for the upper millimeter wave frequencies since 1994, when the Commission initiated on its own motion Docket No. 94-124. *See Amendment of Parts 2 and 15 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Notice of Proposed Rule Making*, ET Docket No. 94-124, 9 FCC Rcd 7078 (1994) (“*Above 40 GHz Notice*”). *See also Amendment of Parts 2, 15, and 97 of the Commission’s Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Third Report and Order*, ET Docket No. 94-124, 13 FCC Rcd 15074 (1998).

<sup>14</sup> IRAC is composed of a main committee, and 5 subcommittees that consider various aspects of spectrum management policy. IRAC is a body that consists of 23 agencies, with an FCC staff person as the liaison for IRAC. The basic functions of the IRAC are to assist the Assistant Secretary in assigning frequencies to U.S. Government radio stations and in developing and executing policies, programs, procedures, and technical criteria pertaining to the allocation, management, and use of the spectrum. For further information visit IRAC’s website at <http://www.ntia.doc.gov/osmhome/irac.html>.

<sup>15</sup> Radio Astronomy is based on the reception of radio waves of cosmic origin. The EESS is 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; and (4) Platform interrogation may occur.

<sup>16</sup> A spectral line is electromagnetic radiation given off at a specific frequency by an atom or molecule. Each type of atom or molecule gives off radiation at its own unique set of frequencies; thus, astronomers can explore the properties of stars, interstellar matter or other celestial bodies containing a particular molecule by tuning a radio telescope to one of its characteristic frequencies. For example, carbon monoxide (CO) has a spectral line at 115 GHz (or a wavelength of 2.7 mm). Over 2100 spectral lines of 80 chemical compounds have been identified in the 71-275 GHz range, and more have been predicted. Astronomers are interested in preserving access to as many spectral lines as possible, because they may yield unique information about a host of phenomena in the Universe. *See* <http://imagine.gsfc.nasa.gov/docs/dictionary.html>.

<sup>17</sup> The spectrum of the celestial radio waves reaching the earth contains a broad continuum that covers the whole range of frequencies that can penetrate the earth’s atmosphere. The continuum arises mainly from two mechanisms: (1) thermal emission, the intensity of which is proportional to the temperature; and (2) non-thermal emission, mostly produced by the synchrotron process, in which very high-speed electrons spiral around magnetic-field lines. Studying the continuum emissions of celestial bodies, astronomers can determine their temperature, magnetic field and other properties. *See, e.g.,* [http://www7.nationalacademies.org/bpa/projects\\_corf\\_view1195.pdf](http://www7.nationalacademies.org/bpa/projects_corf_view1195.pdf)

microwave limb sounding and nadir sounding of water vapor and other atmospheric constituents.<sup>18</sup> Therefore, we propose to incorporate the changes from WRC-2000 for the 76-81 GHz and 95-300 GHz bands into our domestic frequency allocation table. This action will promote consistency to the greatest extent possible between our domestic Table of Frequency Allocations (“Table”)<sup>19</sup> and the International Table of Frequency Allocations maintained by the International Telecommunication Union (“ITU”), and will align RAS and EESS operations with spectrum that best suits their needs.<sup>20</sup>

10. Table 2, *infra*, presents the existing and proposed U.S. allocations in the frequency bands above 71 GHz, based upon WRC-2000 results. The status of the services allocated in a frequency band are indicated following the same format as that of the Table, i.e., primary services are indicated in all capital letters (e.g., FIXED) and secondary services are indicated in normal characters (e.g., Mobile). Also, Federal Government (“Federal”) and non-Federal Government (“non-Federal”) allocations in Table 2 are identical, unless otherwise specified. An exception is that amateur, amateur-satellite, broadcasting, and broadcasting-satellite services are allocated only for non-Federal use. We note that the reduction in Government radiolocation allocation in the bands 78-79 GHz and 79-81 GHz, and the removal of the fixed and mobile services from the band 275-300 GHz is proposed, but not as a result of WRC-2000.

11. This realignment would have little impact on current systems because, as indicated above, few systems to date have been implemented above 71 GHz. Under this proposal, the amount of allocated spectrum available to most services, such as, amateur, amateur-satellite, EESS, fixed-satellite service (“FSS”), inter-satellite service (“ISS”), RAS, radiolocation, and space research service (“SRS”) would either increase or remain unchanged. However, due to incompatibility with passive sensor operations, the amount of spectrum allocated for a few services would decrease by an insignificant amount. Specifically, the allocation for fixed service would decrease by 24.8 GHz (from 117 GHz to 92.2 GHz), mobile service would decrease by 24.8 GHz (from 127 GHz to 102.2 GHz), mobile-satellite service (“MSS”) would decrease by 2.3 GHz (from 36 GHz to 33.7 GHz), radionavigation service would decrease by 800 MHz (from 36 GHz to 35.2 GHz), and radionavigation-satellite service (“RNSS”) would decrease by 800 MHz (from 36 GHz to 35.2 GHz). We find that these proposals will not impact the proposals in the *70/80/90 GHz Notice*. In that Notice the Commission proposed changes to remove RAS and any protections of RAS within the band 71-74 GHz, among other changes,<sup>21</sup> and we believe that the changes proposed herein would not affect our proposals for the full development of the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands. We seek comment on the proposed changes. In light of the increases and reductions of allocated spectrum for the various affected services, commenters should address whether the amount of spectrum that would be available to each service is sufficient to satisfy future needs.

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<sup>18</sup> A Microwave Limb Sounder (“MLS”) measures naturally-occurring microwave thermal emissions from the Earth’s atmosphere to remotely sense vertical profiles of selected atmospheric gases, temperature and pressure. For example, a limb-sounding millimeter-wave radiometer (183 GHz, 184 GHz, and 204 GHz) can be used to map global distributions of water vapor, ozone, and chlorine monoxide.

<sup>19</sup> See 47 C.F.R. § 2.106 (Table of Frequency Allocations) for the complete listing of existing allocations and footnotes to the Table.

<sup>20</sup> We note that most of the proposed RAS and EESS allocations herein below 174.8 GHz are co-primary with other active radio services. Licensed services will have to share with the passive services and protect them in many cases. For the RAS case, we believe that the impact of this sharing constraint will be minimal since RAS millimeter wave receivers are usually located on high mountains in order to escape atmospheric absorption of incoming signals from space. Such receivers are in rural areas, not the urban areas where we anticipate most use of these bands by FCC-regulated users.

<sup>21</sup> See *supra* note 1 and accompanying text.

12. We note that the WRC-2000 realignment resulted in certain bands containing RAS and satellite downlink service allocations in the same band or in adjacent bands.<sup>22</sup> Typically, there are spectrum sharing concerns between RAS and the satellite downlink services in such allocation situations because the satellite downlink services can transmit downward directly into sensitive RAS antennas. Because these bands may not be used for satellite downlink applications in the immediate future, we do not think incompatible sharing situations will arise. We also note that whenever possible, it is desirable to maintain consistency with the international table of frequency allocations. If we implement these allocations as proposed, technical sharing criteria may be developed in the future when applications are developed. Nevertheless, we seek comment on the viability of the RAS and satellite downlink services sharing the same band or adjacent bands. Commenters should address any alternative changes to the proposed allocation. Commenters should also address any possible sharing criteria that could be applied to promote sharing between RAS and co-channel or adjacent channel satellite downlinks services.

13. Unlike most bands under consideration in this proceeding which are unused or lightly used, the 76-77 GHz band is currently used by unlicensed vehicle radar systems. WRC-2000 added a new primary radio astronomy allocation, secondary space research allocation, and secondary amateur-satellite allocation to the 76-77 GHz band. In ET Docket No. 94-124, the radio astronomy community expressed concern that new vehicular radar systems could cause interference to radio astronomy operations well outside of the 76-77 GHz band.<sup>23</sup> However, the IEEE Vehicular Radar Standards Subcommittee document VRS-96-6 states that radio astronomy entities typically control access to their telescopes at a distance of at least one kilometer to provide protection from interference caused by automobile spark plugs and other uncontrolled RFI sources.<sup>24</sup> This implies that radio astronomy observatories could tolerate low-powered emissions, as long as they are not in close proximity to their telescopes. We seek comment on the feasibility of spectrum sharing between existing vehicle radar systems and radio astronomy, space research, and amateur satellite operations in this band. Commenters should focus on technical limits for each service that could promote same band operation. In addition, commenters should address possible interference mitigation procedures that can be implemented if these three new services were allocated in the 76-77 GHz band.

14. Consistent with the proposed allocation changes, we propose to update several footnotes to the Table (US74, US211, US246, US263, and US342) to incorporate all the proposed bands to which the footnotes would apply. Additionally, we propose to replace international footnotes 5.340<sup>25</sup> and

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<sup>22</sup> We are proposing to allocate primary RAS and FSS (downlinks) in the following adjacent bands: RAS at 130-134 GHz and FSS (Downlinks) at 123-130 GHz, RAS at 155.5-158.5 GHz and FSS (downlinks) at 158.5-164 GHz, and RAS at 164-167 GHz and FSS (downlinks) at 167-168 GHz. There are other primary satellite downlink services (amateur-satellite, RNSS, MSS, and ISS) that we propose to allocate on a co-channel or adjacent channel basis with RAS. We also note that although there are also secondary allocations where RAS is in the same band or adjacent bands with a secondary satellite downlink service, we point out the primary service allocations since the secondary service allocations have to protect primary allocations from interference.

<sup>23</sup> See *Amendment of Parts 2, 15, and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Third Report and Order*, ET Docket No. 94-124, 13 FCC Rcd 15074 (1998). See also Comments of the National Academy of Sciences through the Committee on Radio Frequencies ("CORF") dated May 28, 1996. CORF commented on interference issues between vehicle radar systems and radio astronomy services in the 217-231 GHz band.

<sup>24</sup> See IEEE Vehicle Radar Standards Subcommittee document VRS-96-6 entitled "Vehicle Radar and Radio Astronomy," dated February 28, 1996. The document is available at the following web address: [http://www.its.bldrdoc.gov/~allen/IEEE\\_VRS/VRSDocs/doclist.html](http://www.its.bldrdoc.gov/~allen/IEEE_VRS/VRSDocs/doclist.html)

<sup>25</sup> This footnote prohibits emissions in certain bands. See Appendix A, Proposed Rules, for a complete list.

5.149<sup>26</sup> with U.S. footnotes US246 and US342, respectively and apply these footnotes to additional bands. The international and domestic footnotes contain the same provisions, except for the frequency bands to which they apply. Other U.S. and international footnotes would be added or deleted as indicated in Table 2 to be consistent with WRC-2000 changes.<sup>27</sup>

15. Finally, to make the U.S. Table consistent with WRC-2000 changes, we propose to delete the nine United States footnotes that were adopted in the *Table Clean-up Order*.<sup>28</sup> These footnotes were added to the Table to maintain the status quo for the United States Table. That is, because the WRC removed several international footnotes that we had adopted into our domestic table, we adopted these nine US footnotes to take their place. Now that we are proposing to adopt the realignment of WRC-2000, these footnotes would no longer apply. We seek comment on the proposed changes.

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<sup>26</sup> This footnote urges administrations to take all practicable steps to protect the radio astronomy service from harmful interference when making assignments in certain bands. See Appendix A, Proposed Rules, for a complete list of the RAS bands that are protected.

<sup>27</sup> When a footnote is first introduced in Table 2, a brief description is given. For a complete explanation of each revised footnote, see Appendix B: Proposed Rules. All other footnotes can be found in 47 C.F.R. § 2.106 (Table of Frequency Allocations).

<sup>28</sup> These nine footnotes are: US369, US370, US371, US372, US373, US374, US375, US376, and US377. See *Amendment of Part 2 of the Commission's Rules to Make Non-Substantive Revisions to the Table of Frequency Allocations, Order* ("Table Clean-up Order") in Docket No. 02-1872, FCC 17 Rcd 15263 (August 5, 2002).



Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
71-76 GHz Realignment proposed in the 70/80/90 GHz NPRM		
76-77 GHz RADIOLOCATION Amateur	76-77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur	Additional 1.5 GHz for RAS. Additional 1.5 GHz for SRS (downlinks).
77-77.5 GHz RADIOLOCATION Amateur Amateur-satellite	Amateur-satellite Space research (downlinks)  US342 (take all practicable steps to protect RAS from harmful interference)	Additional 1 GHz for AMSAT.
77.5-78 RADIOLOCATION AMATEUR AMATEUR-SATELLITE	77.5-78 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (downlinks)  US342	Additional 500 MHz for RAS & SRS downlinks). Reduction of 500 MHz for radiolocation.
78-81 RADIOLOCATION Amateur Amateur-satellite	78-79 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (downlinks)  5.560 US342	Additional 1 GHz for RAS & SRS (downlinks). Reduction of 1 GHz for Gov't radiolocation.
5.560 (radars located on space stations may be operated on a primary basis in the EESS & SRS)	79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (downlinks)  US342	Additional 2 GHz for RAS & SRS (downlinks). Reduction of 2 GHz for Gov't radiolocation.
81-86 GHz Realignment proposed in the 70/80/90 GHz NPRM		
86-92 GHz No change.		
92-95 GHz Realignment proposed in the 70/80/90 GHz NPRM		
95-100 GHz MOBILE US376 (stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services) MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation  5.149 (take all practicable steps to protect RAS from harmful interference)  5.554 (satellite links connecting land stations at specified fixed points are authorized when used in conjunction with MSS or RNSS)	95-100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE     5.554 US342	Additional 5 GHz for fixed & RAS. Upgrade 5 GHz for radiolocation to primary status. Reduction of 5 GHz for MSS.

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
100-102 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)  5.341 US246	100-102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.340 (all emissions prohibited in band)  5.341 (passive research is being conducted by some countries in a program for the search for intentional emissions of extraterrestrial origin)  US246	Additional 2 GHz for RAS (passive).
102-105 GHz FIXED FIXED-SATELLITE (downlinks)  5.341  US211 (applicants for airborne or space station assignments are urged to take all practicable steps to protect RAS observations in the adjacent bands from harmful interference)	102-105 GHz FIXED MOBILE RADIO ASTRONOMY  5.341 US342	Additional 3 GHz for mobile & RAS.  Reduction of 3 GHz for FSS (downlinks).
105-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B (limited to space-based RAS only)  5.341 US342	Additional 4.5 GHz for fixed & mobile.  Reduction of 4.5 GHz for EESS (passive).
	109.5-111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246	No change.
	111.8-114.25 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.341 US342	Additional 2.45 GHz for fixed & mobile.  Reduction of 2.45 GHz for EESS (passive).
	114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246	No change.
116-119.98 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 (stations in the aeronautical mobile service may be operated subject to not causing harmful interference to ISS) SPACE RESEARCH (passive)  5.341 US211  US263 (SRS & EESS shall not receive protection from the fixed and mobile services operating in accordance with the Table of Frequency Allocations)	116-122.25 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C (use is limited to satellites in the geostationary-satellite orbit and power flux density limit specified) SPACE RESEARCH (passive)  5.138 (designated for industrial, scientific, and medical (ISM) applications)  5.341 US211	Reduction of 6.25 GHz for fixed & mobile.  Reduction of 40 MHz for amateur.
See next page for 119.98-120.02 GHz.		

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
119.98-120.02 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive) Amateur  5.341 US211 US263	See previous page for 116-122.25 GHz.	
120.02-126 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive)	122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 (aeronautical mobile service may not cause harmful interference to ISS) Amateur  5.138	Additional 750 MHz for amateur.  Reduction of 750 MHz for EESS (passive) & SRS (passive).
5.138 US211 US263	123-130 FIXED-SATELLITE (downlinks) MOBILE-SATELLITE (downlinks) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy	Additional 3 GHz for FSS (downlinks), MSS (downlinks), radionavigation, RNSS, & RAS.  Reduction of 3 GHz for EESS (passive), fixed, ISS, mobile, & SRS (passive).
126-134 GHz FIXED INTER-SATELLITE MOBILE US373 RADIOLOCATION US374 (airborne radars in the radiolocation service may be operated subject to not causing harmful interference to ISS)	5.554 US211 US342	Additional 4 GHz for FSS (downlinks), MSS (downlinks), radionavigation, RNSS, & RAS.  Reduction of 4 GHz for fixed, ISS, mobile, & radiolocation.
	130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E (EESS (active) is limited to this band) FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY  5.562A (EESS & RAS should mutually plan their operations)  US342	Additional 500 MHz for EESS (active)  Additional 4 GHz for RAS.  Reduction of 4 GHz for radiolocation.
See next page for 134-142 GHz.	134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	Additional 2 GHz for amateur, AMSAT, & RAS.  Reduction of 2 GHz for mobile, MSS, radionavigation, RNSS, & radiolocation.

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
134-142 GHz MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE Radiolocation  5.149  917 (all emissions from airborne stations and from space stations in the downlink direction, are prohibited)  US371 (satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with MSS or RNSS)  US372 (allocated to RAS on a primary basis)	See previous page for 134-136 GHz.  136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite     US342	Additional 5 GHz for RAS, amateur, & AMSAT.  Upgrade 5 GHz for radiolocation to primary status.  Reduction of 5 GHz for mobile, MSS, radionavigation, & RNSS.
142-144 GHz AMATEUR AMATEUR-SATELLITE	141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Additional 7.5 GHz for fixed & RAS.  Additional 2 GHz for radiolocation on a primary basis.  Additional 6.5 GHz for mobile.
144-149 GHz RADIOLOCATION Amateur Amateur-satellite   5.149 US372	US342	Upgrade 1 GHz for radiolocation to primary status.  Reduction of 6.5 GHz for amateur & AMSAT.  Reduction of 1 GHz for MSS, radionavigation, & RNSS.
149-150 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE	148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	Additional 3 GHz for RAS.  Additional 2 GHz for EESS (passive) & SRS (passive).  Reduction of 500 MHz of radiolocation, amateur, & AMSAT.
150-151 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (downlinks) MOBILE SPACE RESEARCH (passive)  US263 US342  US369 (allocated to RAS on a secondary basis for spectral line observations)	US342	Reduction of 2.5 GHz for fixed & FSS (downlinks).  Reduction of 2 GHz for mobile.
151-164 GHz FIXED FIXED-SATELLITE (downlinks)	US246  151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	Additional 4 GHz for mobile, RAS, & radiolocation.  Reduction of 4 GHz for FSS (downlinks).
US211	US342 See next page for 155.5-158.5 GHz.	

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
See previous page for 151-164 GHz.	155.5-158.5 GHz EARTH EXPLORATION-SATELLITE (passive) 5.562F (allocation to EESS (passive) & SRS (passive) shall terminate on 1 January 2018) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.562G (date of entry to fixed & mobile shall be 1 January 2018)  US342	Additional 3 GHz for EESS (passive), mobile, RAS, & SRS (passive).  Reduction of 3 GHz for FSS (downlinks).
	158.5-164 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE MOBILE-SATELLITE (downlinks)  US211	Additional 5.5 GHz for mobile & MSS (downlinks).
164-168 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  US246	164-167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  US246	No change.
	167-168 GHz FIXED FIXED-SATELLITE (downlinks) INTER-SATELLITE MOBILE 5.558 US211	Additional 1 GHz for fixed, FSS (downlinks), ISS, & mobile.  Reduction of 1 GHz for EESS (passive), RAS, & SRS (passive).
168-170 GHz FIXED MOBILE	168-170 GHz FIXED FIXED-SATELLITE (downlinks) INTER-SATELLITE MOBILE 5.558	Additional 2 GHz for FSS (downlinks) & ISS.
170-174.5 GHz FIXED INTER-SATELLITE MOBILE 5.558  US342 US369	170-174.5 GHz FIXED FIXED-SATELLITE (downlinks) INTER-SATELLITE MOBILE 5.558	Additional 4.5 GHz for FSS (downlinks).
174.5-174.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE 5.558 SPACE RESEARCH (passive)  US263 US342 US369	174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	Reduction of 300 MHz for EESS (passive) & SRS (passive).
174.8-176.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE US373 SPACE RESEARCH (passive)  US263 US342 US369	174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H (limited to satellites in geostationary-satellite orbit with power flux density specified) SPACE RESEARCH (passive)	Additional 5.5 GHz for EESS (passive) & SRS (passive).  Reduction of 7.2 GHz for fixed and mobile.
See next page for 176.5-182 GHz.		

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
176.5-182 GHz FIXED INTER-SATELLITE MOBILE US373  US211 US342 US369	See previous page for 174.8-182 GHz.	
182-185 GHz No change.		
185-190 GHz FIXED INTER-SATELLITE MOBILE US373  US211 US342 US369	185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	Additional 5 GHz for EESS (passive) & SRS (passive).  Reduction of 5 GHz for fixed & mobile.
190-191.8 GHz MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  US371	190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)  US246	Additional 1.8 GHz for EESS (passive) & SRS (passive).  Reduction of 1.8 GHz for mobile, MSS, radionavigation, & RNSS.
191.8-200 GHz MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.341 5.554	191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.341 5.554 US211	Additional 8.2 GHz for fixed & ISS.
200-202 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)  5.341 US263	200-209 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341  5.563A (ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents)	Additional 9 GHz for RAS.  Additional 7 GHz for EESS (passive) & SRS (passive).  Reduction of 9 GHz for fixed & mobile.  Reduction of 7 GHz for FSS (downlinks).
202-217 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE  5.341	US246 209-217 GHz FIXED FIXED-SATELLITE (uplinks) MOBILE RADIO ASTRONOMY  5.341 US342	Additional 8 GHz for RAS.  Change FSS to uplink direction.

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
217-231 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246	217-226 GHz FIXED FIXED-SATELLITE (uplinks) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.341 US342	Additional 9 GHz for fixed, FSS (uplinks), & mobile.  Removal of 9 GHz for EESS (passive).
	226-231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	Additional 500 MHz for EESS (passive), RAS, & SRS (passive).  Removal of 500 MHz for fixed, FSS (downlinks), mobile, & radiolocation.
231-235 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE Radiolocation  US211	US246	
	231.5-232 GHz FIXED MOBILE Radiolocation	Removal of 500 MHz for FSS (downlinks).
232-235 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE Radiolocation		No change.
	235-238 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (downlinks) MOBILE SPACE RESEARCH (passive)  5.563A  5.563B (allocated to EESS (active) & SRS (active) for spaceborne cloud radars only)	Removal of 3 GHz for fixed & mobile.
238-241 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE Radiolocation	238-240 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	Additional 2 GHz for radionavigation & RNSS.  Upgrade 2 GHz for radiolocation to primary status.
	240-241 GHz FIXED MOBILE RADIOLOCATION	Upgrade 1 GHz for radiolocation to primary status.  Removal of 1 GHz for FSS (downlinks).
241-248 GHz RADIOLOCATION Amateur Amateur-satellite	241-248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite  5.138 US342	Additional 7 GHz for RAS.
248-250 GHz AMATEUR AMATEUR-SATELLITE	248-250 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy  US342	Additional 2 GHz for RAS.

Continuation of Table 2: Existing U.S. Allocations vs. Proposals for Realigned Allocations		
Existing U.S. Allocation	Proposed U.S. Allocations	Summary of Major Changes
250-252 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)  US342 US372	250-252 GHz EARTH-EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.563A US246	Additional 2 GHz for RAS (passive).
252-265 GHz MOBILE US376 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.554 US211 US342 US369 US372	252-265 GHz FIXED MOBILE MOBILE-SATELLITE (uplinks) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.554 US211 US342	Additional 13 GHz for fixed & RAS.  Specify that the 13 GHz for MSS is in the uplink direction.
265-275 GHz FIXED FIXED-SATELLITE (downlinks) MOBILE RADIO ASTRONOMY  US342	265-275 GHz FIXED FIXED-SATELLITE (uplinks) MOBILE RADIO ASTRONOMY  5.563A US342	Change fixed-satellite to uplink direction.
275-300 GHz FIXED MOBILE  US375 (take all practicable steps to protect passive services from harmful interference and band may be used by administrations for experimentation with, and development of, various active and passive services) 300-1000 (Not allocated) US375	275-1000 GHz (Not Allocated)  5.565 (take all practicable steps to protect spectral line measurements for passive services from harmful interference until the date when the allocation table is established and may be used by administrations for experimentation with, and development of, various active and passive services)	Removal of 25 GHz for fixed & mobile.

#### B. Maximum Power Density in the Band 55.78-56.26 GHz

16. In December 2000, the Commission adopted a *Report and Order* to realign allocations in the 50.2-50.4 GHz and 51.4-71 GHz frequency bands.<sup>29</sup> One issue under consideration was whether to protect EESS services in the 55.78-56.26 GHz band by adopting a maximum power spectral density limit that can be delivered to fixed service transmitter antennas.<sup>30</sup> However, because that band was allocated to the fixed service on a primary basis and available for any fixed point-to-point or point-to-multipoint use, the Commission deferred action on this issue, stating that protection of EESS in the 55.78-56.26 GHz band was unnecessary.<sup>31</sup> At WRC-2000, the United States stated that “based upon studies contained within Recommendation ITU-R SA.1279,<sup>32</sup> sharing is feasible between the EESS passive and the high density applications in the fixed service (“HDFS”), provided that the parameters assumed in the Recommendation are not exceeded.”<sup>33</sup> Therefore, the United States had proposed to limit a maximum

<sup>29</sup> See supra note 4.

<sup>30</sup> This power limit is a transmitter power limit, not an effective isotropic radiated power (e.i.r.p.) limit. Thus users have the flexibility to use large antenna gain in order to meet distance requirements.

<sup>31</sup> *Id.* at ¶ 29.

<sup>32</sup> See ITU-R Recommendation SA.1279, “Spectrum sharing between spaceborne passive sensors and inter-satellite links in the range 50.2-59.3 GHz.”

<sup>33</sup> See United States of America Proposals For The Work Of The [WRC-2000] Conference, Document 12-E, dated 12 January 2000, Proposals for agenda item 1.4. The proposed footnote in Document 12-E was modified at WRC-2000 to read as quoted above.



power spectral density delivered to fixed service transmitter antennas at 55.78-56.26 GHz to -28.5 dB (W/MHz). Instead, WRC-2000 adopted a higher power density limit of -26 dB (W/MHz). NTIA finds the WRC-2000 power density limit unacceptable for domestic use, and requests that the U.S. proposal of -28.5 dB (W/MHz) be adopted domestically. As indicated in Recommendation ITU-R SA.1279, this band has a unique natural resource for remote temperature profile sensing in the atmosphere. NTIA requests the tighter limit because passive measurements are extremely vulnerable to interference due to the variability of the atmosphere, which can have a dramatic impact on climate studies and the quality of weather predictions. We believe that adopting the power density limit recommended by NTIA will have minimal impact on current and future use of the band. Because there has not been much fixed service equipment development in this band – currently there are only a few experimental licenses – the more stringent standard may only affect a minimal amount of existing equipment, and entities planning on developing equipment for this band will be able to design for the new standard from the start. Accordingly, we propose to adopt a new United States footnote, which would read as follows:

USxxx In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered to fixed service transmitter antennas is limited to -28.5 dB(W/MHz).

We seek comment on the proposed power spectral density limit. Commenters should address the power spectral density limit in terms of its ability to protect EESS and its impact on equipment development, as well as, alternative power limits for the 55 GHz systems that would provide the same overall protection to EESS services. Commenters should address the impact of this limit on other services in the band.

### PROCEDURAL MATTERS

#### A. Initial Regulatory Flexibility Certification

17. The Commission has prepared an Initial Regulatory Flexibility Certification concerning this present action. The Certification is set forth in Appendix B. This action realigns unused allocations in extremely high frequency bands above 76 GHz. This action proposes to conform United States frequency allocations above 76 GHz to international allocations and adopt domestic limits to protect the EESS from unacceptable interference. Neither of these actions will affect existing operations.

#### B. *Ex Parte* Rules – Permit-But-Disclose Proceedings

18. This is a permit-but-disclose notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules. See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.2306(a).

#### C. Comments

19. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before [60 days from date of publication in the Federal Register], and reply comments on or before [90 days from date of publication in the Federal Register]. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies. See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

20. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an

electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should include the following words in the body of the message, "get form <your e-mail address." A sample form and directions will be sent in reply. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number.

21. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistrionix, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW, Washington, D.C. 20554. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

D. Contact Person

22. For additional information concerning the Notice, contact Shameeka Parrott at 202-418-2062, or via the Internet at [sparrott@fcc.gov](mailto:sparrott@fcc.gov).

E. Ordering Clauses

23. Accordingly, IT IS ORDERED that pursuant to Sections 1, 4, 301, and 303, of the Communications Act of 1934, as amended, 47 U.S.C. Sections 151, 154, 301, and 303, the Notice of Proposed Rule Making IS ADOPTED.

24. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Notice, including the Initial Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

## APPENDIX A

## PROPOSED RULES

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR Part 2 as follows:

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

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

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

2. Section 2.106, the Table of Frequency Allocations, is proposed to be amended as follows:

a. Revise pages 79 and 81 through 90.

b. In the list of United States (US) Footnotes, revise footnotes US74, US211, US246, US263, and US342; delete US369, US370, US371, US372, US373, US374, US375, US376, and US377; and add footnote USxxx.

The proposed revisions and addition read as follows:

**§ 2.106 Table of Frequency Allocations.**

\* \* \* \* \*

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

65-92 GHz (EHF)			Page 81		
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
65-66 EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH			65-66 EARTH EXPLORATION- SATELLITE FIXED MOBILE except aeronautical mobile SPACE RESEARCH	65-66 EARTH EXPLORATION- SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH	
5.547					
66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE			66-71 MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION- SATELLITE	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION- SATELLITE	
5.554			5.554	5.554	
71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)			71-74 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space)  US270		
74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth)			74-75.5 FIXED FIXED-SATELLITE (Earth-to-space) US297 MOBILE		
5.559A 5.561			75.5-76	75.5-76 AMATEUR AMATEUR-SATELLITE	Amateur (97)
76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)			76-77.5 RADIO ASTRONOMY RADIOLOCATION Space research (space-to-Earth)	76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)	RF Devices (15) Amateur (97)
5.149			US342	US342	

<p>77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth)</p> <p>5.149</p>	<p>77.5-78 Radio astronomy Space research (space-to-Earth)</p> <p>US342</p>	<p>77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth)</p> <p>US342</p>	<p>Amateur (97)</p>
<p>78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth)</p> <p>5.149 5.560</p>	<p>78-79 RADIO ASTRONOMY RADIOLOCATION Space research (space-to-Earth)</p> <p>5.560 US342</p>	<p>78-79 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)</p> <p>5.560 US342</p>	
<p>79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)</p> <p>5.149</p>	<p>79-81 RADIO ASTRONOMY RADIOLOCATION Space research (space-to-Earth)</p> <p>US342</p>	<p>79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)</p> <p>US342</p>	
<p>81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth)</p> <p>5.149 5.561A</p>	<p>81-84 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)</p>		
<p>84-86 FIXED FIXED SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY</p> <p>5.149</p>	<p>84-86 FIXED MOBILE</p> <p>US211 US377</p>	<p>84-86 FIXED MOBILE BROADCASTING BROADCASTING- SATELLITE</p> <p>US211 US377</p>	
<p>86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>	<p>86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)</p> <p>US246</p>		

92-119.98 GHz (EHF)			Page 83		
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
92-94 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION			92-95 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIOLOCATION		
5.149					
94-94.1 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy					
5.562 5.562A					
94.1-95 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION					
5.149			US342		
95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE			95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
5.149 5.554			5.554 US342		
100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340 5.341			5.341 US246		
102-105 FIXED MOBILE RADIO ASTRONOMY			102-105 FIXED MOBILE RADIO ASTRONOMY		
5.149 5.341			5.341 US342		

105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.149 5.341	105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.341 US342
109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  5.340 5.341	109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246
111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.149 5.341	111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B  5.341 US342
114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  5.340 5.341	114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.341 US246



119.98-164 GHz (EHF)

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
116-119.98 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive)			116-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive)		ISM Equipment (18)
5.341 119.98-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive)					
5.138 5.341			5.138 5.341 US211		
122.25-123 FIXED INTER-SATELLITE MOBILE 5.558 Amateur			122.25-123 FIXED INTER-SATELLITE MOBILE 5.558	122.25-123 FIXED INTER-SATELLITE MOBILE 5.558 Amateur	ISM Equipment (18) Amateur (97)
5.138			5.138	5.138	
123-130 FIXED SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D			123-130 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy		
5.149 5.554			5.554 US211 US342		
130-134 EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY			130-134 EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY		
5.149 5.562A			5.562A US342		
134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy			134-136 Radio astronomy	134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy	Amateur (97)
136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite			136-141 RADIO ASTRONOMY RADIOLOCATION	136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite	
5.149			US342	US342	

141-148.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	141-148.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	
5.149	US342	
148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	
5.340	US246	
151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION	
5.149	US342	
155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B	155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B	
5.149 5.562G	5.562G US342	
158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
	US211	

164-217 GHz (EHF)			Page 87		
International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340			US246		
167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558			167-168 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 US211		
			168-170 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558		
			170-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558		
5.149 5.562D					
174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558			174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558		
174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)			174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340 5.563			US246		

185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	
190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	
5.340	US246	
191.8-200 FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	191.8-200 FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE	
5.149 5.341 5.554	5.341 5.554 US211	
200-202 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	200-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	
5.340 5.341 5.563A		
202-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340 5.341 5.563A	5.341 5.563A US246	
209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	
5.149 5.341	5.341 US342	

217-1000 GHz (EHF)

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International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B			217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B		
5.149 5.341			5.341 US342		
226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)			226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340			US246		
231.5-232 FIXED MOBILE Radiolocation			231.5-232 FIXED MOBILE Radiolocation		
232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation			232-235 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)			235-238 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)		
5.563A 5.563B			5.563A 5.563B		
238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE			238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240-241 FIXED MOBILE RADIOLOCATION			240-241 FIXED MOBILE RADIOLOCATION		

241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite  5.138 5.149	241-248 RADIO ASTRONOMY RADIOLOCATION  5.138 US342	241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite  5.138 US342	ISM Equipment (18) Amateur (97)
248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy  5.149	248-250 Radio astronomy  US342	248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy  US342	Amateur (97)
250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)  5.340 5.563A	250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)  5.563A US246		
252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.149 5.554	252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE  5.554 US211 US342		
265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY  5.149 5.563A	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY  5.563A US342		
275-1000 (Not allocated) 5.565	275-1000 (Not allocated) 5.565		

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## UNITED STATES (US) FOOTNOTES

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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, 100-102, 109.5-111.8, 114.25-116, 148.5-151.5, 164-167, 200-209, and 250-252, 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 technical standards or criteria applicable to the service in which it operates. Radio astronomy observations in these bands are performed at the locations listed in US311.

\*\*\*\*\*

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, 123-130, 158.5-164, 167-168, 191.8-200, and 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 bands from harmful interference; however, US74 applies.

\*\*\*\*\*

US246 No station shall be authorized to transmit in the following bands:  
608-614 MHz, except for medical telemetry equipment,<sup>1</sup>  
1400-1427 MHz,  
1660.5-1668.4 MHz,  
2690-2700 MHz,  
4990-5000 MHz,  
10.68-10.7 GHz,  
15.35-15.4 GHz,  
23.6-24 GHz,  
31.3-31.8 GHz,  
50.2-50.4 GHz,  
52.6-54.25 GHz,  
86-92 GHz,  
100-102 GHz,  
109.5-111.8 GHz,  
114.25-116 GHz,  
148.5-151.5 GHz,  
164-167 GHz,  
182-185 GHz,  
190-191.8 GHz,  
200-209 GHz,  
226-231.5 GHz,  
250-252 GHz,

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

US263 In the bands 21.2-21.4 GHz, 22.21-22.5 GHz, 36-37 GHz, and 56.26-58.2 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.

\* \* \* \* \*

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

13360-13410 kHz,	22.81-22.86 GHz,	136-148.5 GHz,
37.5-38.25 MHz,	23.07-23.12 GHz,	151.5-158.5 GHz,
322-328.6 MHz,	31.2-31.3 GHz,	209-226 GHz,
1330-1400 MHz,	36.43-36.5 GHz,	241-250 GHz,
1610.6-1613.8 MHz,	42.5-43.5 GHz,	252-275 GHz
1660-1670 MHz,	48.94-49.04 GHz,	
3260-3267 MHz,	76-81 GHz,	
3332-3339 MHz,	95-100 GHz,	
3345.8-3352.5 MHz,	102-109.5 GHz,	
4825-4835 MHz,	111.8-114.25 GHz,	
14.47-14.5 GHz,	128.33-128.59 GHz,	
22.01-22.21 GHz,	129.23-129.49 GHz,	
22.21-22.5 GHz,	130-134 GHz,	

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29 of the ITU Radio Regulations).

\* \* \* \* \*

USxxx In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to -28.5 dB(W/MHz).

\* \* \* \* \*



## APPENDIX B

## INITIAL REGULATORY FLEXIBILITY CERTIFICATION

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

In this Notice, we propose to realign allocations in the bands 76-81 GHz and 95-1000 GHz consistent with the international allocation changes obtained at WRC-2000. This proposal would align passive allocations for RAS and Earth-exploration satellite services with spectrum that is more suited for such operations and would continue the Commission’s efforts to promote the commercial development and growth of the “millimeter wave” spectrum, which will provide for future developments in technology and equipment. In this Notice, we also propose to adopt domestically the United States proposal at WRC-2000 in regards to the maximum power density delivered by a transmitter to the antenna of a fixed service in the 55.78-56.26 GHz band. This proposal will protect EESS from unaccepted interference from fixed and mobile operations. These proposed changes will not cause a significant adverse economic impact to small entities because there are no licensed commercial uses above 76 GHz; that is, no incumbent licensees will be affected. Service rules will be adopted in later proceedings, as appropriate.

Therefore, we certify that the proposals in the Notice, if adopted, will not have a significant economic impact on a substantial number of small entities. The Commission will send a copy of this Notice, including a copy of this Initial Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the SBA.<sup>7</sup> This initial certification will also be published in the Federal Register.<sup>8</sup>

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<sup>2</sup> See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. N. 104-121, Title II, 110 Stat. 857 (1996).

<sup>3</sup> 5 U.S.C. § 605(b).

<sup>4</sup> 5 U.S.C. § 601(6).

<sup>5</sup> 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

<sup>6</sup> 15 U.S.C. § 632.

<sup>7</sup> 5 U.S.C. § 605(b).

<sup>8</sup> *Id.*