UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

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JUL 18 2001

ET Doc. No. 02-305

Bruce Franca
Acting Chief, Office of Engineering and Technology
Federal Communications Commission
Washington DC 20554

Dear Mr. Franca:

NTIA has completed a review of the results of the 2000 World Radio Conference (WRC). Based on coordination with the Interdepartment Radio Advisory Committee (IRAC), changes to the U.S. Table of Frequency Allocations for new Radionavigation-Satellite Services and for frequency bands above 71 GHz have been developed. The changes to the allocation table are shown in the Attachments.

We understand that your staff is working on a rulemaking item that is to consider changes to frequency allocations coming out of previous conferences. We would request that you incorporate the changes from WRC-2000 for RNSS and the changes for bands above 71 GHz in your rulemaking.

Sincerely,

William T. Hatch
For Associate Administrator
Office of Spectrum Management

cc: Donald Abelson, Chief International Bureau

Attachments

ATTACHMENT 1

Allocations for Radionavigation-Satellite Service (RNSS) Resulting from WRC-2000 Decisions

U.S. plans for implementing new RNSS signals are proceeding and it is important to include the required frequency allocation changes in the U.S. allocation table in the near future. Therefore, we would like to implement the WRC-2000 adopted GPS L5 and space to space allocations. Making these allocation changes now will not prejudice adopting additional allocations, or other changes, in the future.

Details of the Proposal:

960-1215 MHz

The WRC agreed to a worldwide allocation for RNSS between 1164-1215 MHz, on a shared basis. The U.S. however, only intends to use 1164-1188 MHz for RNSS, at this time. RNSS will not cause interference or claim protection from ARNS in this band. We propose to defer consideration of RNSS the 1188-1215 MHz band.

Since the WRC adopted changes to **RR S5.328** referring to RNSS in the wider band, a new U.S. footnote is required to allocate 24 MHz to RNSS in the 1164-1188 MHz band and is contained in proposed **USL5**. An option considered for the RNSS allocation was to place the service in the allocation table. Both the L1 link at 1559-1610 and L2 at 1215-1240 MHz are shown nationally in the allocation table. However, NTIA believes that it is preferable to be consistent with the international table for the 960-1215 MHz band. Thus, we propose to add the allocation to the U.S. table by footnote.

NTIA also considered the advisability of adding a domestic power flux-density (pfd) limit on the RNSS allocation to ensure protection of the ARNS. A provisional pfd on the RNSS is included in the international allocation footnote and this value is being studied in the ITU-R. However, if a pfd limit needs to be imposed domestically, it would be preferable to add it in Chapter 8 of the NTIA Manual and in the FCC Service Rules, rather than in an allocation footnote. Therefore, we have determined that the RNSS allocation without a pfd is the appropriate approach.

1215-1240 MHz and 1559-1610 MHz, Space-to-Space

The other allocation for which there is an immediate need in the U.S. is the space-to-space allocations for GPS. In the L1 band, we propose to extend the space-to-space allocation to the entire band as done in the WRC-2000 change. However, WRC-2000 also adopted restrictions on the use of space-to-space, which we accepted for international purposes, but are considered unnecessary in

the U.S. Therefore, the new international footnotes for space-to-space are not included in the proposals for the bands 1215-1240 and 1559-1610 MHz.

For presentation purposes the proposals also show the allocation changes adopted for WRC-97 for these bands that have previously ben sent to the Commission, as well as, the new numbering for international footnotes and other changes shown in the current update to the NTIA table September 2000 edition. Note also that G56 has been placed against the radiolocation service in the 1215-1240 MHz band as it appears in the current NTIA table. In addition **S5.333** has been deleted since it is no longer necessary now that EESS (active) is allocated in the band.

United States Table		Remarks
Federal Government	Non-Federal Government	
960-1215 AERONAUTICAL RADIONAVIGATION S5.328 US224 USL5		Aviation (87)
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION ~~S5.333~~ G56 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) S5.332	1215-1240 Earth exploration-satellite (active) Space research (active) ~~S5.333~~	
1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION ~~S5.333~~ G56 SPACE RESEARCH (active) S5.332 S5.334 S5.335	1240-1300 Earth exploration-satellite (active) Amateur Space research (active) S5.282 ~~S5.333~~ S5.334	Amateur (97)

1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.341 US208 US260 G126	Note: Footnote G126 states that DGPS stations may be authorized on a primary basis in this band, but the FCC has not yet addressed this footnote.

S5.328—The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

USL5--The band 1164-1188 MHz is also allocated to the radionavigation-satellite service (space-to-Earth, space-to-space) on a primary basis. In this band stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service.

particularly interesting for studies of star formation, the properties of the interstellar medium, the chemical evolution of the Universe and many other phenomena.

Details of the Proposal:

Attached are the WRC-2000 results in the 71 – 1000 GHz range to be incorporated into the U.S. tables. Several principles, which were followed in developing the attached tables, are:

> The results were compared with the U.S. proposal and CITEL joint proposal. The only differences that appear in the WRC-2000 results were as a result of a final realignment at the Conference between the CITEL, APT and CEPT regional proposals. The U.S. position on each of these differences was to align with the other regions as much as was practicable which was indeed done at the Conference.
>
> Footnotes US74, US211, US246, US263, US270, US297, and US342 are U.S. footnotes that are applicable in this frequency range. They were consequentially modified to match the changes in the table of allocations as was appropriate. Additionally, US270 is suppressed as it is no longer applicable and US342 is also suppressed. The latter footnote is merely repetitious of the international footnote S5.149 and is therefore considered superfluous. These results are shown after the table of allocations.
>
> In cases where there were both government and non-government allocations were delineated in the table of allocations, these distinctions were retained as was practicable in the relocated allocations.

The 71-1000 GHz section of the U.S. table of allocations is presented in final format rather than revision format for the sake of conciseness and comprehensibility. It is noted that the Conference realigned (i.e. moved around) the vast majority of the allocations in this frequency range and we show this portion of the international table for convenience.

ATTACHMENT 2

WRC-2000 Changes to Allocations in Bands Above 71 GHz

Almost all of the current spaceborne passive sensing allocations in the range 71 - 275 GHz were decided by WARC-79. Many technological and scientific advances and discoveries have occurred since that time and these allocations need to be revised to reflect present and foreseeable future requirements for spaceborne passive sensing for a myriad of Earth observation applications including agriculture, climatology, meteorology and study of global change of the Earth and its environment. Increased awareness of the stress being placed on the Earth system has led the global user community, including the World Meteorological Organization, Global Climate Observing System, and World Climate Research Programme, to define satellite data requirements for atmospheric parameters including temperature and water vapor profiles, ozone concentration, and other radiatively and chemically active trace gases, which can only be met by satellite passive sensors. The frequency range 71 - 275 GHz is fundamental to the achievement of these important sensing capabilities.

During the last decade technology became available that is expected to facilitate the exploitation of frequency bands above 30 GHz. WRC-97 realigned allocations in the 50.2-71.0 GHz range in a way that allows use of these bands by passive services (e.g., for remote sensing and meteorological observations), as well as for commercial purposes. The passive services have substantial interests in the above 71 GHz frequency range as well, up to the 275 GHz limit of the allocation table and beyond. The active services are interested in using this spectrum, e.g. for applications involving high data rate transmission and because propagation characteristics allow extensive frequency reuse. Few active systems have been implemented to date above 71 GHz, and therefore WRC-2000 offered a unique opportunity to provide additional allocations to satisfy passive service needs, to protect existing allocations for future use, and to reorganize the allocations above 71 GHz as needed so that spectrum can be successfully used by both passive and active services in that range.

The millimeter wavelength range was, until recently, one of the few spectral regions not fully explored by radio astronomers because of the special observing conditions and instruments required. During the last decade, as millimeter technology matured, millimeter-wave astronomy has become one of the most exciting frontiers in astronomical research. This spectral range is

71-102 GHz (EHF)				
International Table			United States Table	
Region 1	Region 2	Region 3	Federal Government	Non-Federal G
71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)			**71-74** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) S5.561 S5.559A			**74-76** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) S5.561 S5.559A US211	
76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) S5.149			**76-77.5** RADIO ASTRONOMY RADIOLOCATION Space research (space-to-Earth) S5.149	**76-77.5** RADIO ASTRO RADIOLOCAT Amateur Amateur-satelli Space research Earth) S5.149
77.5-78 AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) S5.149			**77.5-78** Radio astronomy Space research (space-to-Earth) S5.149	**77.5-78** AMATEUR AMATEUR-SATELLITE Radio astronom Space research Earth) S5.149

	78-79 Space research (space-to-Earth) S5.149 S5.560	**78-79** RADIOLOCA Amateur Amateur-satell Radio astronom Space research Earth) S5.149 S5.560

78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) S5.149 S5.560		
79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) S5.149	**79-81** RADIO ASTRONOMY Space research (space-to-Earth) S5.149	**79-81** RADIO ASTR RADIOLOCAT Amateur Amateur-satelli Space research Earth) S5.149
81-84 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) S5.149 S5.560A	**81-84** FIXED FIXED-SATELLITE (Earth-to-space) US29 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) S5.149 S5.560A	
84-86 FIXED FIXED-SATELLITE (Earth-to-space) S5.561A MOBILE RADIO ASTRONOMY S5.149	**84-86** FIXED FIXED-SATELLITE (Earth-to-space) S5.5 MOBILE RADIO ASTRONOMY S5.149	
86-92 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	**86-92** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246	

92-94 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	**92-94** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	
94-94.1 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy S5.562 S5.562A	**94-94.1** EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio Astronomy S5.562 S5.562A	**94-94.1** RADIOLOCAT Radio astronom S5.562 S5.562
94.1-95 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	**94.1-95** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	
95-100 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.554	**95-100** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.554	
100-102 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341	**100-102** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 S5.341 US246	

102-164 GHz (EHF)				
International Table			United States Table	
Region 1	Region 2	Region 3	Federal Government	Non-Federal G
102-105 FIXED MOBILE RADIO ASTRONOMY S5.149 S5.341			**102-105** FIXED MOBILE RADIO ASTRONOMY S5.149 S5.341	
105-109.5 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341			**105-109.5** FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341	
109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341			**109.5-111.8** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 S5.341 US246	
111.8-114.25 FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341			**111.8-114.25** FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341	
114.25-116 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341			**114.25-116** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 S5.341 US246	
116-122.25 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.562C SPACE RESEARCH (passive) S5.341 S5.138			**116-122.25** EARTH EXPLORATION-SATELLITE (pa INTER-SATELLITE S5.562C SPACE RESEARCH (passive) S5.341 S5.138	

122.25-123 FIXED INTER-SATELLITE MOBILE S5.558 Amateur S5.138	**122.25-123** FIXED INTER-SATELLITE MOBILE S5.558 S5.138	**122.25-123** FIXED INTER-SATEL MOBILE S5.5 Amateur S5.138
123-126 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.554	**123-126** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.554	
126-130 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.562D S5.149 S5.554	**126-130** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.562D S5.149 S5.554 US211	
130-134 EARTH EXPLORATION-SATELLITE (active) S5.562E FIXED INTER-SATELLITE MOBILE S5.558 RADIO ASTRONOMY S5.149 S5.562A	**130-134** EARTH EXPLORATION-SATELLITE (ac S5.562E FIXED INTER-SATELLITE MOBILE S5.558 RADIO ASTRONOMY S5.149 S5.562A	
134-136 AMATEUR AMATEUR-SATELLITE Radio astronomy	**134-136** Radio astronomy	**134-136** AMATEUR AMATEUR-SATELLITE Radio astronom
136-141 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.149	**136-141** RADIO ASTRONOMY RADIOLOCATION S5.149	**136-141** RADIO ASTRO RADIOLOCAT Amateur Amateur-satelli S5.149

141-148.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	**141-148.5** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149
148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	**148.5-151.5** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 US246
151.5-155.5 FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149	**151.5-155.5** FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION S5.149
155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) S5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.562G	**155.5-158.5** EARTH EXPLORATION-SATELLITE (pa S5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.562G
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

164-209 GHz (EHF)				
International Table			United States Table	
Region 1	Region 2	Region 3	Federal Government	Non-Federal G
164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340			**164-167** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 US246	
167-168 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558			**167-168** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 US211	
168-170 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149			**168-170** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149	
170-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149 S5.562D			**170-174.5** FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE S5.558 S5.149 S5.562D	
174.5-174.8 FIXED INTER-SATELLITE MOBILE S5.558			**174.5-174.8** FIXED INTER-SATELLITE MOBILE S5.558	

174.8- 182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.562H SPACE RESEARCH (passive)	**174.8- 182** EARTH EXPLORATION-SATELLITE (pa INTER-SATELLITE S5.562H SPACE RESEARCH (passive)
182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.563	**182-185** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 US246
185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE S5.562H SPACE RESEARCH (passive)	**185-190** EARTH EXPLORATION-SATELLITE (pa INTER-SATELLITE S5.562H SPACE RESEARCH (passive)
190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) S5.340	**190-191.8** EARTH EXPLORATION-SATELLITE (pa SPACE RESEARCH (passive) S5.340 US246
191.8-200 FIXED INTER-SATELLITE MOBILE S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.341 S5.554	**191.8-200** FIXED INTER-SATELLITE MOBILE S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.341 S5.554 US211
200-209 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.341 S5.563A	**200-209** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 S5.341 S5.563A US246

209-275 GHz (EHF)				
International Table			United States Table	
Region 1	Region 2	Region 3	Federal Government	Non-Federal G
209-217 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.341			**209-217** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.341	
217-226 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341			**217-226** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.562B S5.149 S5.341	
226-231.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340			**226-231.5** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 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) S5.563A S5.563B			**235-238** EARTH EXPLORATION-SATELLITE (pa FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) S5.563A S5.563B	

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 S5.138 S5.149	**241-248** RADIO ASTRONOMY RADIOLOCATION S5.138 S5.149	**241-248** RADIO ASTR RADIOLOCAT Amateur Amateur-satelli S5.138 S5.149
248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy S5.149	**248-250** Radio astronomy S5.149	**248-250** AMATEUR AMATEUR- SATELLITE Radio astronom S5.149
250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.563A	**250-252** EARTH EXPLORATION-SATELLITE (pa RADIO ASTRONOMY US74 SPACE RESEARCH (passive) S5.340 S5.563A US246	
252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.554	**252-265** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE S5.149 S5.554 US211	

265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.563A	**265-275** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY S5.149 S5.563A
275-1000 (not allocated) S5.565	**275-1000** (not allocated) S5.565

UNITED STATES (US) FOOTNOTES

(These footnotes, each consisting of the letters US followed by one or more digits, denote stipulations applicable to both Federal Government and non-Federal Government stations.)

MOD

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, 105-116100.5-111.8, 114.25-116, 148.5-151.5, 164-167, 200-209, and 217-231250-252 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.

MOD

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, 74-76, 84-86, 102-105, 116-126, 126-130, 151158.5-164, 167-168, 176.5-182, 185-190, 191.8-200, 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 bands from harmful interference; however, US74 applies.

MOD

US246 No station shall be authorized to transmit in the following bands:
608-614 MHz, except for medical telemetry equipment[1],
1400-1427 MHz,
1660.5-1668.4 MHz,
2690-2700 MHz,
4990-5000 MHz,
10.68-10.7 GHz,
15.35-15.4 GHz,
23.6-24 GHz,
31.3-31.8 GHz,
50.2-50.4 GHz,
52.6-54.25 GHz,
86-92 GHz,
100-102 GHz,
105-116 GHz,
100.5-111.8 GHz,
114.25-116 GHz,

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[1] 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.

148.5-151.5 GHz,
164-168 167 GHz,
182-185 GHz,
190-191.8 GHz,
200-209 GHz,
226-231.5 GHz,
250-252 GHz
217-231 GHz.

MOD

US263 In the bands 21.2-21.4 GHz, 22.21-22.5 GHz, 36-37 GHz, and 56.26-58.2 GHz, 116-126 GHz, 150-151 GHz, 174.5-176.5 GHz, 200-202 GHz, and 235-238 GHz, the space research and the Earth exploration-satellite services shall not receive protection from the fixed and mobile services operating in accordance with the Table of Frequency Allocations.

SUP

US270

MOD

US297 The bands 47.2-49.2 GHz and 74.0-75.581-82.5 GHz are also available for feeder links for the broadcasting-satellite service.

SUP

US342

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

NOC

FEDERAL GOVERNMENT (G) FOOTNOTES

NOC

INTERNATIONAL (S) FOOTNOTES

MOD

S5.149 In making assignments to stations of other services to which the bands:

13.360-13.410 kHz,	6.650-6.675.2 MHz,	94.1-100 GHz,
25.550-25.670 kHz,	10.6-10.68 GHz,	102-109.5 GHz,
37.5-38.25 MHz,	14.47-14.5 GHz,	111.8-114.25 GHz,
73.0-74.6 MHz in Regions 1 and 3,	22.01-22.21 GHz,	128.33-128.59 GHz,
150.05-153 MHz in Region 1,	22.21-22.5 GHz,	129.23-129.49 GHz,
322-328.6 MHz,	22.81-22.86 GHz,	130-134 GHz,
406.1-410 MHz,	23.07-23.12 GHz,	136-148.5 GHz,
608-614 MHz in Regions 1 and 3,	31.2-31.3 GHz,	151.5-158.5 GHz,
1.330-1.400 MHz,	31.5-31.8 GHz in Regions 1	168.59-168.93 GHz,
1.610.6-1.613.8 MHz,	and 3	171.11-171.45 GHz,
1.660-1.670 MHz,	36.43-36.5 GHz,	172.31-172.65 GHz,
1.718.8-1.722.2 MHz,	42.5-43.5 GHz,	173.52-173.85 GHz,
2.655-2.690 MHz,	42.77-42.87 GHz,	195.75-196.15 GHz,
3.260-3.267 MHz,	43.07-43.17 GHz,	209-226 GHz,
3.332-3.339 MHz,	43.37-43.47 GHz,	241-250 GHz,
3.345.8-3.352.5 MHz,	48.94-49.04 GHz,	252-275 GHz
4.825-4.835 MHz,	76-86 GHz,	
4.950-4.990 MHz,	92-94 GHz,	
4.993-5.000 MHz,		

are allocated, administrations are urged to take all practical 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. **S4.5** and **S4.6** and Article **S29**).

MOD

S5.340 All emissions are prohibited in the following bands:

1.400-1.427 MHz,	
2.690-2.700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz2,	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	

86-92 GHz,
100-102 GHz,
109.5-111.8 GHz,
114.25-116 GHz,
148.5-151.5 GHz,
164-167 GHz,
182-185 GHz, except those provided for by No. **S5.563**,
190-191.8 GHz,
200-209 GHz,
226-231.5 GHz,
250-252 GHz.

NOC

S5.138

NOC

S5.341

MOD

S5.385 *Additional allocation:* 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.

MOD

S5.553 In the bands 43.5-47 GHz and 66-71 GHz, stations in the land mobile service may be operated, subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **S5.43**).

MOD

S5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, 191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

MOD

S5.555 *Additional allocation:* the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis.

MOD

S5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz and 64-65 GHz, radio astronomy observations may be carried out under national arrangements.

MOD

S5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, 122.25-123 GHz, 130-134 GHz, 167.17-174.8 GHz and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

MOD

S5.559 In the band 59-64 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

ADD

S5.559A The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

NOC

S5.560

ADD

S5.560A The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis.

MOD

S5.561 In the band 74-76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

ADD

S5.561A In Japan, use of the band 84-86 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit.

NOC

S5.562

ADD

S5.562A Transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damagee some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible.

ADD

S5.562B Use of this allocation is limited to space-based radio astronomy only.

ADD

S5.562C Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed −148 dB(W/(m² · MHz)) for all angles of arrival.

ADD

S5.562D *Additional allocation:* In Korea (Rep. of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis until 1 2015.

ADD

S5.562E The allocation to the Earth exploration-satellite service (active) is limited to the band 155.5-158.5 GHz.

ADD

S5.562F In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

ADD

S5.562G The date of entry into force of the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

ADD

S5.562H Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 36 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed −144 dB(W/(m² · MHz)) for all angles of arrival.

NOC

S5.563

ADD

S5.563A In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.

ADD

S5.563B The band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only.

SUP

S5.564

MOD

S5.565 The frequency band 275-1 000 GHz may be used by administrations for experimentation with and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

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

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

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation table is established in the above-mentioned frequency band.