



International Civil Aviation Organization

**Eight Meeting of the Communications/Navigation/Surveillance and
Meteorology Sub-Group (CNS/MET SG/8) of APANPIRG**

Bangkok, Thailand, 12-16 July 2004

Agenda Item 7: Aeronautical electromagnetic spectrum utilization

1) review Agenda Item 5 of AN-Conf/11

**OVERVIEW OF AMENDMENTS TO ARTICLE 5 OF ITU RADIO REGULATIONS RELEVANT
TO AERONAUTICAL RADIO SERVICES**

(Presented by the Secretariat)

SUMMARY

This paper highlights the changes agreed at WRC-2003 to Article 5 of the Radio Regulations relating to radio services.

Band: 108–117.975 MHz		
Service: Aeronautical radionavigation (VOR/ILS localizer)		
Allocation:		
MHz		
108–117.975		
Allocation to Services		
Region 1	Region 2	Region 3
108–117.975	AERONAUTICAL RADIONAVIGATION	
	5.197 5.197A	

Footnote:

5.197 *Additional allocation:* in Japan, Pakistan and Syria, the band 108–111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **9.21**.

[5.197A](#) The band 108-117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis, limited to systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international standards. Such use shall be in accordance with Resolution **413 (WRC-03)** and shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service which operate in accordance with international aeronautical standards. (WRC-03)

Band: 960–1 215 MHz		
Service: Aeronautical radionavigation (DME/SSR/ACAS)		
Allocation:		
MHz		
960–1 164215		
Allocation to Services		
Region 1	Region 2	Region 3
960–1 164215	AERONAUTICAL RADIONAVIGATION 5.328	
	5.328A	
MHz		
1 164–1 215		
Allocation to Services		
Region 1	Region 2	Region 3
1 164–1 215	AERONAUTICAL RADIONAVIGATION 5.328	
	RADIO-NAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B	
	5.328A	

Footnotes:

5.328 The use of the band 960–1215 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 groundbased facilities.

~~5.328B–5.328A~~ The use of the bands ~~1 164–1 300 MHz, 1 559–1 610 MHz and 5 010–5 030 MHz~~ by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the provisions of Nos. **9.12, 9.12A and 9.13**. Resolution **610 (WRC-03)** shall also apply. (WRC-03)

~~5.328A~~ *Additional allocation:* ~~The band 1 164–1 3215 MHz is also allocated to Stations in the radionavigation-satellite service in the band 1 164–1 215 MHz shall operate in accordance with the provision of Resolution **609 (WRC-03)** and shall not (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux density produced by all the space stations of all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of –115 dB (W/m²) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause interference to, nor claim protection from; stations in of the aeronautical radionavigation service in the band 960–1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall Resolution **605 (WRC-2000)** apply. (WRC-03)~~

See also:

[Art. 21/18: Administration operating or planning to operate radionavigation-satellite service systems or networks in the 1 164–1 215 MHz frequency band, for which complete coordination or notification information was received by the Bureau after 2 June 2000, shall, in accordance with resolves 2 of Resolution **609 \(WRC-03\)**, take all necessary steps to ensure that actual aggregate interference into aeronautical radionavigation service systems caused by such RNSS systems or networks operating co-frequency in these](#)

frequency bands does not exceed the equivalent power-flux density level shown in resolves 1 of Resolution 609 (WRC-03) (WRC-03)

Band: 1 215– 1 260 <u>1300</u> MHz			
Service: Radiolocation/radionavigation-satellite (GNSS/surveillance radar)			
Allocation:			
MHz			
1 215–1 260 <u>1300</u>			
Allocation to Services			
Region 1	Region 2	Region 3	
1 215–1 240	EARTH EXPLORATIONSATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)	5.329 5.329A <u>5.328B</u>	
	SPACE RESEARCH (active) 5.330 5.331 5.332		
1 240–1 <u>300</u>260	EARTH EXPLORATIONSATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE- (space-to-Earth) (space-to-space)	5.329 5.329A <u>5.328B</u>	
	SPACE RESEARCH (active) Amateur <u>5.282</u> 5.330 5.331 5.332 5.334 5.335 <u>5.335A</u>		

Footnotes:

5.282 In the bands 435–438 MHz, 1260–1270 MHz, 2400–2450 MHz, 3400–3410 MHz (in Regions 2 and 3 only) and 5650–5670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. 5.43). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateursatellite service is immediately eliminated in accordance with the provisions of No. 25.11. The use of the bands 1260–1270 MHz and 5650–5670 MHz by the amateursatellite service is limited to the Earth-to-space direction.

5.328B The use of the bands 1 164–1 300 MHz, 1 559–1 610 MHz and 5 010–5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the provisions of Nos. 9.12, 9.12A and 9.13. Resolution 610 (WRC-03) shall also apply. (WRC-03)

5.329 Use of the radionavigation-satellite service in the band 1215–1300MHz shall be subject to the condition that no harmful interference is caused to, and no protection claimed from, the radionavigation service authorized under No. 5.331. ~~See also Resolution 606 (WRC-2000). Furthermore, the use of the radionavigation-satellite service in the band 1 215–1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. 5.43 shall not apply in respect of the radiolocation service. Resolution 608 (WRC-03) shall apply. (WRC-03)~~

5.329A Use of systems in the radionavigation-satellite service (space-space) operating in the bands 1 215–1 300 MHz and 1 559–1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table.

5.330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, ~~Moreocco~~, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Somalia, Sudan, Sri Lanka, Chad, Togo and Yemen, the band 1215–1300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

5.331 *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, Syrian Arab Republic, Slovakia, the United Kingdom, Serbia and Montenegro, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey Venezuela and Viet Nam and Yugoslavia, the band 1215–1300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States the band 1 240–1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-03)

5.332 In the band 1215–1 260 MHz, active spaceborne sensors in the Earth exploration satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigationsatellite service and other services allocated on a primary basis.

~~5.334—Additional allocation: in Canada and the United States, the bands 1240–1300 MHz and 1350–1370 MHz are also allocated to the aeronautical radionavigation service on a primary basis.~~

5.335 In Canada and the United States in the band 1 240–1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service.

5.335A In the band 1260–1300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service and other services allocated by footnotes on a primary basis.

Band: 1 559–1 626.5 MHz

Service: Aeronautical radionavigation / Radionavigation
satellite / Mobile-satellite (GNSS)

Allocation:

MHz
1559–1626.5

Allocation to Services		
Region 1	Region 2	Region 3
1559–1610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329A 5.328B 5.341 5.362B 5.362C 5.363	
1610–1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610–1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610–1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1610.6–1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.363 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610.6–1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610.6–1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1613.8–1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.341 5.355 5.359 5.363 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1613.8–1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	1613.8–1626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) Mobile-satellite (space-to-Earth) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372

Footnotes:

5.328B- The use of the bands 1 164–1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the provisions of Nos. 9.12, 9.12A and 9.13. Resolution 610 (WRC-03) shall also apply. (WRC-03)

5.149 In making assignments to stations of other services to which the bands: ... 1610.6–1613.8 MHz, ... 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).

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1215–1300 MHz and 1559–1610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table.

5.341 In the bands 1400–1727 MHz, 101–120 GHz and 197–220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

5.351A For the use of the bands 1525–1544 MHz, 1545–1559 MHz, 1610–1626.5 MHz, 1626.5–1645.5 MHz, 1646.5–1660.5 MHz,

1980–2010 MHz, 2 170–2 200 MHz, 2 483.5–2 500 MHz, 2 500–2 520 MHz and 2670–2690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **225 (WRC-2000)**.

5.355 *Additional allocation:* in Bahrain, Bangladesh, Congo, [\(Rep. of the\)](#), Egypt, Eritrea, Iraq, Israel, ~~Jordan~~, Kuwait, Lebanon, Malta, ~~Morocco~~, Qatar, Syrian [Arab Republic](#), Somalia, Sudan, Chad, Togo and Yemen, the bands 1540–1559 MHz, 1610–1645.5 MHz and 1646.5–1660 MHz are also allocated to the fixed service on a secondary basis. [\(WRC-03\)](#)

5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakhstan, Kuwait, ~~Latvia~~, Lebanon, Libyan [Arab Jamahiriya](#), Lithuania, ~~Mali~~, ~~Morocco~~, Mauritania, Moldova, Mongolia, ~~Nigeria~~, Uganda, Uzbekistan, Pakistan, Poland, Syrian [Arab Republic](#), Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, ~~Senegal~~, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1550–1559 MHz, 1610–1645.5 MHz and 1646.5–1660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands. [\(WRC-03\)](#)

5.362B *Additional allocation:* The band 1559–1610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakhstan, ~~Latvia~~, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libyan [Arab Jamahiriya](#), Mali, ~~Morocco~~, Mauritania, Syrian [Arab Republic](#) and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. [\(WRC-03\)](#)

5.362C *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1559–1610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time the allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band.

5.363 *Alternative allocation:* in Sweden, the band 1590–1626.5 MHz is allocated to the aeronautical radionavigation service on a primary basis.

5.364 The use of the band 1610–1626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radiodetermination-satellite service (Earth-to-space) is subject to coordination under No. **9.11A**. A mobile earth station operating in either of the services in this band shall not produce a peak e.i.r.p. density in excess of –15 dB(W/4 kHz) in the part of the band used by systems operating in accordance with the provisions of No. **5.366** (to which No. **4.10** applies), unless otherwise agreed by the affected administrations. In the part of the band where such systems are not operating, the mean e.i.r.p. density of a mobile earth station shall not exceed –3 dB(W/4 kHz). Stations of the mobile-satellite service shall not claim protection from stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. **5.366** and stations in the fixed service operating in accordance with the provisions of No. **5.359**. Administrations responsible for the coordination of mobile-satellite networks shall make all practicable efforts to ensure protection of stations operating in accordance with the provisions of No. **5.366**.

5.365 The use of the band 1613.8–1626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**.

5.366 The band 1610–1626.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground based or satellite borne facilities. Such satellite use is subject to agreement obtained under No. **9.21**.

5.367 *Additional allocation:* The bands 1610–1626.5 MHz and 5000–5150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**.

5.368 With respect to the radiodetermination satellite and mobile satellite services the provisions of No. **4.10** do not apply in the band 1610–1626.5 MHz, with the exception of the aeronautical radionavigation satellite service.

5.369 *Different category of service:* in Angola, Australia, Burundi, China, ~~Côte d'Ivoire~~, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, ~~Jordan~~, Lebanon, Liberia, Libyan [Arab Jamahiriya](#), Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syrian [Arab Republic](#), ~~Senegal~~, Sudan, Swaziland, Togo and Zambia, the allocation of the band 1610–1626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. **5.33**) subject to agreement obtained under No. **9.21** from countries not listed in this provision. [\(WRC-03\)](#)

5.370 *Different category of service:* in Venezuela, the allocation to the radiodetermination-satellite service in the band 1610–1626.5 MHz (Earth-to-space) is on a secondary basis.

5.371 *Additional allocation:* in Region 1, the bands 1610–1626.5 MHz (Earth-to-space) and 2 483.5–2500 MHz (space-to-Earth) are also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. **9.21**.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6–1613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services. (No. **29.13** applies.)

Band: 2 700–3 300 MHz

Service: Aeronautical radionavigation / Radionavigation / Radiolocation (surveillance radar)

Allocation:

MHz

2700–3300

Allocation to Services

Region 1	Region 2	Region 3
2700–2900	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	
2900–3100	RADIONAVIGATION 5.426 Radiolocation RADIOLOCATION 5.424A 5.425 5.427	
3100–3300	RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	

Footnotes:

5.149 In making assignments to stations of other services to which the bands: ... 3260–3267 MHz ... 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).

5.337 The use of the bands 1300–1350 MHz, 2700–2900 MHz and 9000–9200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.

[5.424A In the band 2 900-3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. \(WRC-03\)](#)

5.423 In the band 2700–2900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.

5.424 *Additional allocation:* in Canada, the band 2850–2900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

5.425 In the band 2900–3100 MHz, the use of the shipborne interrogator-transponder system (SIT) shall be confined to the sub-band 2930–2950 MHz.

5.426 The use of the band 2900–3100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

5.427 In the bands 2900–3100 MHz and 9300–9500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. **4.9**.

5.428 *Additional allocation:* in Azerbaijan, [Bulgaria](#), Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3100–3300 MHz is also allocated to the radionavigation service on a primary basis.

Band: 5 000–5 250 MHz

Service: Aeronautical radionavigation (MLS)

Allocation:

MHz

5 000–5 250

Allocation to Services		
Region 1	Region 2	Region 3
5 000-5 010	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367	
5 010-5 030	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) (space-to-space) 5.443B 5.328B	
5 030–5 150	AERONAUTICAL RADIONAVIGATION	

	5.367 5.443A 5.443B 5.444 5.444A
5 150–5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE SERVICE (Earth-to-space) 5.447A <u>MOBILE except aeronautical mobile 5.446A 5.446B</u> 5.446 5.447 5.447B 5.447C

Footnotes:

5.328B The use of the bands 1 164–1 300 MHz, 1 559–1 610 MHz and 5 010–5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the provisions of Nos. **9.12**, **9.12A** and **9.13**. Resolution **610 (WRC-03)** shall also apply. (WRC-03)

5.367 *Additional allocation:* The bands 1610–1626.5 MHz, 5000–5150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**.

~~5.443A—Additional allocation: The band 5000–5010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **603 (WRC-2000)**.~~

~~5.443B Additional allocation: The band 5010–5030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5030–5150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5010–5030 MHz shall not exceed –124.5 dB (W/m²) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4990–5000 MHz, the aggregate power flux-density produced in the 4990–5000 MHz band by all the space stations within any radionavigation-satellite service (space-to-Earth) systems operating in the band 5010–5030 MHz shall comply with the limits in the band 4 990–5 000 MHz defined in Resolution **741 (WRC-03)**. (WRC-03) not exceed the provisional value of –171 dB(W/m²) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **604 (WRC-2000)** applies.~~

5.444 The band 5030–5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **5.444A** and Resolution **114 (Rev. WRC0395)** apply. (WRC-03)

5.444A *Additional allocation:* the band 5091–5150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems and is subject to coordination under No. **9.11A**.

In the band 5091–5150 MHz, the following conditions also apply:

- prior to 1 January 2018⁰, the use of the band 5091–5150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev. WRC0395)**;
- prior to 1 January 2018⁰, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5000–5091 MHz band, shall take precedence over other uses of this band;
- after 1 January 2012⁰⁸, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018⁰, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-03)

5.446 *Additional allocation:* in the countries listed in Nos. **5.369** and **5.400**, the band 5150–5216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. **5.369** and **5.400**, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the bands 1610–1626.5 MHz and/or 2483.5–2500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.446A The use of the bands 5 150–5 350 MHz and 5 470–5 725 MHz by the stations in the mobile service shall be in accordance with Resolution **229 (WRC-03)**. (WRC-03)

5.446B In the band 5 150–5 250 MHz, stations in the mobile service shall not claim protection from earth Stations in the fixed-satellite service. No. **5.43A** does not apply to the mobile service with respect to fixed-satellite service earth stations.

5.447 *Additional allocation:* in ~~Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Lebanon, Pakistan, the Netherlands, Portugal, Syrian Arab Republic, the United Kingdom, Sweden, Switzerland~~ and Tunisia, the band 5150–5250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. In this case, the provisions of Resolution **229 (WRC-03)** do not apply. (WRC-03)

5.447A The allocation to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

5.447B *Additional allocation:* the band 5150–5216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. **9.11A**. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5150–5216 MHz shall in no case exceed -164 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.447C Administrations responsible for fixed-satellite service networks in the band 5150–5250 MHz operated under Nos. **5.447A** and **5.447B** shall coordinate on an equal basis in accordance with No. **9.11A** with administrations responsible for non-geostationary satellite networks operated under No. **5.446** and brought into use prior to 17 November 1995. Satellite networks operated under No. **5.446** brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under Nos. **5.447A** and **5.447B**.

Band: 5 350–5 470 MHz

Service: Aeronautical radionavigation (airborne weather radar)

Allocation:

MHz
5 350–5 470

Allocation to Services		
Region 1	Region 2	Region 3
5 350–5 460	EARTH EXPLORATION-SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation RADIOLOCATION 5.448D SPACE RESEARCH (active) 5.448C	
5 460–5 470	RADIONAVIGATION 5.449 Radiolocation RADIOLOCATION 5.448D SPACE RESEARCH (active) EARTH EXPLORATION-SATELLITE (active) 5.448B	

Footnotes:

[5.448D](#) In the frequency band 5 350-5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. **5.449**. (WRC-03)

[5.448C](#) The space research service (active) operating in the band 5 350-5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated.

5.448B The ~~E~~earth exploration-satellite (active) service operating in the band 5350–5 ~~570~~**460** MHz ~~and space research service (active) operating in the band 5 460-5 470 MHz~~ shall not cause harmful interference to, ~~or constrain the use and development of,~~ the aeronautical radionavigation service ~~in the band 5 350-5 460 MHz, the radionavigation service in the band 5 460-5 470 MHz and the maritime radionavigation service in the band 5 470-5 570 MHz.~~ (WRC-03)

5.449 The use of the band 5350–5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.
