

INTERNATIONAL ( ITU ) FREQUENCY ALLOCATIONS (REGION 3)	NATIONAL ( NTC ) FREQUENCY ALLOCATIONS	CHANNEL PLAN	REMARKS
Below 8.3 KHz (Not allocated) 5.53 5.54	Below 8.3 KHz (Not allocated) 5.53 5.54		
8.3-9 KHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C	8.3-9 KHz METEOROLOGICAL AIDS 5.54A 5.54B 5.54C		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
9-11.3 KHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	9-11.3 KHz METEOROLOGICAL AIDS 5.54A RADIONAVIGATION	9-59.75 KHz SRDs	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
11.3-14 KHz RADIONAVIGATION	11.3-14 KHz RADIONAVIGATION		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
14 - 19.95 KHz FIXED MARITIME MOBILE 5.57 5.55 5.56	14 - 19.95 KHz FIXED MARITIME MOBILE 5.57 5.55 5.56		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
19.95 - 20.05 KHz STANDARD FREQUENCY & TIME SIGNAL	19.95 - 20.05 KHz STANDARD FREQUENCY & TIME SIGNAL		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
20.05 - 70 KHz FIXED MARITIME MOBILE 5.57 5.56 5.58	20.05 - 70 KHz FIXED MARITIME MOBILE 5.57 5.56 5.58		59.75-60.25 KHz SRDs 60.25-70.0 KHz SRDs
70 - 72 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.57 5.59	70 - 72 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.57 5.59	70-119 KHz SRDs	
72 - 84 KHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60	72 - 84 KHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
84 - 86 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.57 5.59	84 - 86 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.57 5.59		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
86 - 90 KHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60	86 - 90 KHz FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

90 - 110 KHz RADIONAVIGATION 5.62 Fixed 5.64	90 - 110 KHz RADIONAVIGATION 5.62 Fixed 5.64		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
110 - 112 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	110 - 112 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
112 - 117.6 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.64 5.65	112 - 117.6 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.64 5.65		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
117.6 - 126 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	117.6 - 126 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
126 - 129 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.64 5.65	126 - 129 KHz RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.64 5.65	119-135 KHz SRDs	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
129 - 130 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	129 - 130 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
130-135.7 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	130-135.7 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
135.7-137.8 KHz FIXED MARITIME MOBILE RADIONAVIGATION Amateur 5.67A 5.64 5.67B	135.7-137.8 KHz FIXED MARITIME MOBILE RADIONAVIGATION Amateur 5.67A 5.64 5.67B	135-140 KHz SRDs	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

137.8-160 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	137.8-160 KHz FIXED MARITIME MOBILE RADIONAVIGATION 5.64	140-148.5 KHz SRDs	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
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- 5.53** Administrations authorizing the use of frequencies below 8.3 kHz shall ensure that no harmful interference is caused to services to which the bands above 8.3 kHz are allocated. (WRC-12)
- 5.54** Administrations conducting scientific research using frequencies below 8.3 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference. (WRC-12)
- 5.54A** Use of the 8.3-11.3 kHz frequency band by stations in the meteorological aids service is limited to passive use only. In the band 9-11.3 kHz, meteorological aids stations shall not claim protection from stations of the radionavigation service submitted for notification to the Bureau prior to 1 January 2013. For sharing between stations of the meteorological aids service and stations in the radionavigation service submitted for notification after this date, the most recent version of Recommendation ITU-R RS.1881 should be applied. (WRC-12)
- 5.54B** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Morocco, Qatar, the Syrian Arab Republic, Sudan and Tunisia, the frequency band 8.3-9 kHz is also allocated to the radionavigation, fixed and mobile services on a primary basis. (WRC-15)
- 5.54C** *Additional allocation:* in China, the frequency band 8.3-9 kHz is also allocated to the maritime radionavigation and maritime mobile services on a primary basis. (WRC-12)
- 5.55** *Additional allocation:* in Armenia, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the frequency band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-15)
- 5.56** The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-12)
- 5.57** The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the band concerned.
- 5.58** *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)
- 5.59** *Different category of service:* in Bangladesh and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**). (WRC-2000)
- 5.60** In the bands 70-90 kHz (70-86 kHz in Region 1) and 110-130 kHz (112-130 kHz in Region 1), pulsed radionavigation systems may be used on condition that they do not cause harmful interference to other services to which these bands are allocated.

- 5.61** In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70-90 kHz and 110-130 kHz shall be subject to agreement obtained under No. **9.21** with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.
- 5.62** Administrations which operate stations in the radionavigation service in the band 90-110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.
- 5.63** (SUP - WRC-97)
- 5.64** Only classes A1A or F1B, A2C, A3C, F1C or F3C emissions are authorized for stations of the fixed service in the bands allocated to this service between 90 kHz and 160 kHz (148.5 kHz in Region 1) and for stations of the maritime mobile service in the bands allocated to this service between 110 kHz and 160 kHz (148.5 kHz in Region 1). Exceptionally, class J2B or J7B emissions are also authorized in the bands between 110 kHz and 160 kHz (148.5 kHz in Region 1) for stations of the maritime mobile service.
- 5.65** *Different category of service:* in Bangladesh, the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**). (WRC-2000)
- 5.66** *Different category of service:* in Germany, the allocation of the band 115-117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**) and to the radionavigation service on a secondary basis (see No. **5.32**).
- 5.67** *Additional allocation:* in Mongolia, Kyrgyzstan and Turkmenistan, the band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-07)
- 5.67A** Stations in the amateur service using frequencies in the band 135.7-137.8 kHz shall not exceed a maximum radiated power of 1 W (e.i.r.p.) and shall not cause harmful interference to stations of the radionavigation service operating in countries listed in No. **5.67**. (WRC-07)
- 5.67B** The use of the band 135.7-137.8 kHz in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Lebanon, Syrian Arab Republic, Sudan, South Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the above-mentioned countries in the band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-12)
- 5.68** *Alternative allocation:* in Congo (Rep. of the), the Dem. Rep. of the Congo and South Africa, the frequency band 160-200 kHz is allocated to the fixed service on a primary basis. (WRC-15)
- 5.69** *Additional allocation:* in Somalia, the band 200-255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.
- 5.70** *Alternative allocation:* in Angola, Botswana, Burundi, the Central African Rep., Congo (Rep. of the), Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, South Africa, Swaziland, Tanzania, Chad, Zambia and Zimbabwe, the band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

160-190 KHz FIXED Aeronautical Radionavigation	160-190 KHz FIXED Aeronautical Radionavigation	148.5-500 KHz SRDs	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Memorandum Circular 02-02-2015 Amending Section 2 of Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
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190 - 200 KHz AERONAUTICAL RADIONAVIGATION	190 - 200 KHz AERONAUTICAL RADIONAVIGATION		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
200 - 285 KHz AERONAUTICAL RADIONAVIGATION Aeronautical Mobile	200 - 285 KHz AERONAUTICAL RADIONAVIGATION Aeronautical Mobile		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
285 - 325 KHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	285 - 325 KHz AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
325 - 405 KHz AERONAUTICAL RADIONAVIGATION Aeronautical Mobile	325 - 405 KHz AERONAUTICAL RADIONAVIGATION Aeronautical Mobile		
405 - 415 KHz RADIONAVIGATION 5.76 Aeronautical Mobile	405 - 415 KHz RADIONAVIGATION 5.76 Aeronautical Mobile		
415 - 472 KHz MARITIME MOBILE 5.79 Aeronautical Radionavigation 5.77 5.80 5.78 5.82	415 - 472 KHz MARITIME MOBILE 5.79 Aeronautical Radionavigation 5.77 5.80 5.78 5.82		
472-479 KHz MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical Radionavigation 5.77 5.80 5.80B 5.82	472-479 KHz MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical Radionavigation 5.77 5.80 5.80B 5.82		
479 - 495 KHz MARITIME MOBILE 5.79 5.79A Aeronautical Radionavigation 5.77 5.80 5.82	479 - 495 KHz MARITIME MOBILE 5.79 5.79A Aeronautical Radionavigation 5.77 5.80 5.82		
495 - 505 KHz MARITIME MOBILE	495 - 505 KHz MARITIME MOBILE		

**5.71** *Alternative allocation:* in Tunisia, the band 255-283.5 kHz is allocated to the broadcasting service on a primary basis.

**5.72** (SUP - WRC-12)

**5.73** The band 285-325 kHz (283.5-325 kHz in Region 1) in the maritime radionavigation service may be used to transmit supplementary navigational information using narrow-band techniques, on condition that no harmful interference is caused to radiobeacon stations operating in the radionavigation service. (WRC-97)

**5.74** *Additional Allocation:* in Region 1, the frequency band 285.3-285.7 kHz is also allocated to the maritime radionavigation service (other than radiobeacons) on a primary basis.

- 5.75** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned. (WRC-07)
- 5.76** The frequency 410 kHz is designated for radio direction-finding in the maritime radionavigation service. The other radionavigation services to which the band 405-415 kHz is allocated shall not cause harmful interference to radio direction-finding in the band 406.5-413.5 kHz.
- 5.77** *Different category of service:* in Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the frequency band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan, the allocation of the frequency band 435-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in all the aforementioned countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the frequency band 435-495 kHz do not cause interference to reception by coast stations of transmissions from ship stations on frequencies designated for ship stations on a worldwide basis. (WRC-12)
- 5.78** *Different category of service:* in Cuba, the United States of America and Mexico, the allocation of the band 415-435 kHz to the aeronautical radionavigation service is on a primary basis.
- 5.79** The use of the bands 415-495 kHz and 505-526.5 kHz (505-510 kHz in Region 2) by the maritime mobile service is limited to radiotelegraphy.
- 5.79A** When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev.WRC-07)**). (WRC-07)
- 5.80** In Region 2, the use of the band 435-495 kHz by the aeronautical radionavigation service is limited to non-directional beacons not employing voice transmission.
- 5.80A** The maximum equivalent isotropically radiated power (e.i.r.p.) of stations in the amateur service using frequencies in the band 472-479 kHz shall not exceed 1 W. Administrations may increase this limit of e.i.r.p. to 5 W in portions of their territory which are at a distance of over 800 km from the borders of Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia, Ukraine and Yemen. In this frequency band, stations in the amateur service shall not cause harmful interference to, or claim protection from, stations of the aeronautical radionavigation service. (WRC-12)
- 5.80B** The use of the frequency band 472-479 kHz in Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia and Yemen is limited to the maritime mobile and aeronautical radionavigation services. The amateur service shall not be used in the above-mentioned countries in this frequency band, and this should be taken into account by the countries authorizing such use. (WRC-12)
- 5.81** (SUP - WRC-2000)
- 5.82** In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles **31** and **52**. In using the frequency band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. In using the frequency band 472-479 kHz for the amateur service, administrations shall ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-12)

**5.82A** (SUP - WRC-12)

**5.82B** (SUP - WRC-12)

505 - 526.5 KHz MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical Mobile Land Mobile	505 - 526.5 KHz MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical Mobile Land Mobile		
526.5 - 535 KHz BROADCASTING Mobile 5.88	526.5 - 535 KHz BROADCASTING Mobile 5.88		
535 - 1606.5 KHz BROADCASTING	535 - 1606.5 KHz BROADCASTING		
1606.5 - 1800 KHz FIXED MOBILE RADIOLOCATION RADIONAVIGATION 5.91	1606.5 - 1800 KHz FIXED MOBILE RADIOLOCATION RADIONAVIGATION 5.91	1705.0 - 1760.0 Shared Band 1760.0 - 1800.0 Military	

**5.83** (SUP - WRC-07)

**5.84** The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **31** and **52**. (WRC-07)

**5.85** Not used.

**5.86** In Region 2, in the band 525-535 kHz the carrier power of broadcasting stations shall not exceed 1 kW during the day and 250 W at night.

**5.87** *Additional allocation:* in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Niger and Swaziland, the band 526.5-535 kHz is also allocated to the mobile service on a secondary basis. (WRC-12)

**5.87A** *Additional allocation:* in Uzbekistan, the band 526.5-1 606.5 kHz is also allocated to the radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-97)

**5.88** *Additional allocation:* in China, the band 526.5-535 kHz is also allocated to the aeronautical radionavigation service on a secondary basis.

**5.89** In Region 2, the use of the band 1 605-1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988). The examination of frequency assignments to stations of the fixed and mobile services in the band 1 625-1 705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

**5.90** In the band 1 605-1 705 kHz, in cases where a broadcasting station of Region 2 is concerned, the service area of the maritime mobile stations in Region 1 shall be limited to that provided by ground-wave propagation.

**5.91** *Additional allocation:* in the Philippines and Sri Lanka, the band 1 606.5-1 705 kHz is also allocated to the broadcasting service on a secondary basis. (WRC-97)

**5.92** Some countries of Region 1 use radiodetermination systems in the bands 1 606.5-1 625 kHz, 1 635-1 800 kHz, 1 850-2 160 kHz, 2 194-2 300 kHz, 2 502-2 850 kHz and 3 500-3 800 kHz, subject to agreement obtained under No. **9.21**. The radiated mean power of these stations shall not exceed 50 W.

**5.93** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-15)

**5.94** and **5.95** Not used.

**5.96** In Germany, Armenia, Austria, Azerbaijan, Belarus, Croatia, Denmark, Estonia, the Russian Federation, Finland, Georgia, Hungary, Ireland, Iceland, Israel, Kazakhstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the frequency bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the frequency bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-15)

1800 - 2000 KHz AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation 5.97	1800 - 2000 KHz AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation 5.97		
2000 - 2065 KHz FIXED MOBILE	2000 - 2065 KHz FIXED MOBILE	2000.0 - 2015.0 Government 2015.0 - 2055.0 Non-Government 2055.0 - 2065.0 Military	
2065 - 2107 KHz MARITIME MOBILE 5.105 5.106	2065 - 2107 KHz MARITIME MOBILE 5.105 5.106		
2107 - 2170 KHz FIXED MOBILE	2107 - 2170 KHz FIXED MOBILE	2107.0 - 2120.0 Government 2120.0 - 2155.0 Non-Government 2155.0 - 2170.0 Military	
2170 - 2173.5 KHz MARITIME MOBILE	2170 - 2173.5 KHz MARITIME MOBILE		
2173.5 - 2190.5 KHz MOBILE (distress & calling) 5.108 5.109 5.110 5.111	2173.5 - 2190.5 KHz MOBILE (distress & calling) 5.108 5.109 5.110 5.111		

2190.5 - 2194 KHz MARITIME MOBILE	2190.5 - 2194 KHz MARITIME MOBILE		
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- 5.97** In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.
- 5.98** *Alternative allocation:* in Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan and Turkey, the frequency band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)
- 5.99** *Additional allocation:* in Saudi Arabia, Austria, Iraq, Libya, Uzbekistan, Slovakia, Romania, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)
- 5.100** In Region 1, the authorization to use the band 1 810-1 830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. **5.98** and **5.99** to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. **5.98** and **5.99**.
- 5.101** (SUP - WRC-12)
- 5.102** *Alternative allocation:* in Bolivia, Chile, Mexico, Paraguay, Peru and Uruguay, the band 1 850-2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC-07)
- 5.102** *Alternative allocation:* in Bolivia, Chile, Paraguay and Peru, the frequency band 1 850-2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC-15)
- 5.103** In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1 850-2 045 kHz, 2 194-2 498 kHz, 2 502-2 625 kHz and 2 650-2 850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.
- 5.104** In Region 1, the use of the band 2 025-2 045 kHz by the meteorological aids service is limited to oceanographic buoy stations.
- 5.105** In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065-2 107 kHz shall be limited to class J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072-2 075.5 kHz are used as provided in No. **52.165**.
- 5.106** In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service communicating only within national borders and whose mean power does not exceed 50 W. In notifying the frequencies, the attention of the Bureau should be drawn to these provisions.
- 5.107** *Additional allocation:* in Saudi Arabia, Eritrea, Ethiopia, Iraq, Libya, Somalia and Swaziland, the band 2 160-2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-12)

- 5.108** The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles **31** and **52**. (WRC-07)
- 5.109** The frequencies 2 187.5 kHz, 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz are international distress frequencies for digital selective calling. The conditions for the use of these frequencies are prescribed in Article **31**.
- 5.110** The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article **31**.
- 5.111** The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**. The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of 3 kHz about the frequency. (WRC-07)

2194 - 2300 KHz FIXED MOBILE 5.112	2194 - 2300 KHz FIXED MOBILE 5.112	2194.0 - 2220.0 Government 2220.0 - 2280.0 Non-Government 2280.0 - 2300.0 Military	
2300 - 2495 KHz FIXED MOBILE BROADCASTING 5.113	2300 - 2495 KHz FIXED MOBILE BROADCASTING 5.113		
2495 - 2501 KHz STANDARD FREQUENCY & TIME SIGNAL (2500 KHz)	2495 - 2501 KHz STANDARD FREQUENCY & TIME SIGNAL (2500 KHz)		
2501 - 2502 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research	2501 - 2502 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research		
2502 - 2505 KHz STANDARD FREQUENCY & TIME SIGNAL	2502 - 2505 KHz STANDARD FREQUENCY & TIME SIGNAL		
2505 - 2850 KHz FIXED MOBILE	2505 - 2850 KHz FIXED MOBILE	2505.0 - 2555.0 Government 2555.0 - 2575.0 Non-Government 2575.0 - 2625.0 Military 2625.0 - 2680.0 Government except 2630(+) 5 KHz assigned to RTS 2680.0 - 2790.0 Non-Government 2790.0 - 2850.0 Military except (+) 5 KHz assigned to RTS	
2850 - 3025 KHz AERONAUTICAL MOBILE ( R ) 5.111 5.115	2850 - 3025 KHz AERONAUTICAL MOBILE ( R ) 5.111 5.115		
3025 - 3155 KHz AERONAUTICAL MOBILE (OR)	3025 - 3155 KHz AERONAUTICAL MOBILE (OR)		

3155 - 3200 KHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	3155 - 3200 KHz FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	3155.0 - 3165.0 Government 3165.0 - 3180.0 Non-Government	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
3200 - 3230 KHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	3200 - 3230 KHz FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

**5.112** *Alternative allocation:* in Denmark and Sri Lanka, the band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

**5.113** For the conditions for the use of the bands 2 300-2 495 kHz (2 498 kHz in Region 1), 3 200-3 400 kHz, 4 750-4 995 kHz and 5 005-5 060 kHz by the broadcasting service, see Nos. **5.16** to **5.20**, **5.21** and **23.3** to **23.10**.

**5.114** *Alternative allocation:* in Denmark and Iraq, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

**5.115** The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31**, by stations of the maritime mobile service engaged in coordinated search and rescue operations. (WRC-07)

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

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

**5.117** *Alternative allocation:* in Côte d'Ivoire, Denmark, Egypt, Liberia, Sri Lanka and Togo, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

3230 - 3400 KHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118	3230 - 3400 KHz FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
3400 - 3500 KHz AERONAUTICAL MOBILE ( R )	3400 - 3500 KHz AERONAUTICAL MOBILE ( R )		
3500 - 3900 KHz AMATEUR FIXED MOBILE	3500 - 3900 KHz AMATEUR FIXED MOBILE		

3900 - 3950 KHz AERONAUTICAL MOBILE BROADCASTING	3900 - 3950 KHz AERONAUTICAL MOBILE BROADCASTING		
3950 - 4000 KHz FIXED BROADCASTING 5.126	3950 - 4000 KHz FIXED BROADCASTING 5.126		
4000 - 4063 KHz FIXED MARITIME MOBILE 5.127 5.126	4000 - 4063 KHz FIXED MARITIME MOBILE 5.127 5.126		
4063 - 4438 KHz MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128	4063 - 4438 KHz MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128		
4438 - 4488 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	4438 - 4488 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A		
4488 - 4650 KHz FIXED MOBILE except aeronautical mobile	4488 - 4650 KHz FIXED MOBILE except aeronautical mobile	4428 - 4480 KHz Government 4480 - 4580 KHz Non-Government	
4650 - 4700 KHz AERONAUTICAL MOBILE ( R )	4650 - 4700 KHz AERONAUTICAL MOBILE ( R )		
4700 - 4750 KHz AERONAUTICAL MOBILE ( OR )	4700 - 4750 KHz AERONAUTICAL MOBILE ( OR )		
4750 - 4850 KHz FIXED BROADCASTING 5.113 Land Mobile	4750 - 4850 KHz FIXED BROADCASTING 5.113 Land Mobile		
4850 - 4995 KHz FIXED LAND MOBILE BROADCASTING 5.113	4850 - 4995 KHz FIXED LAND MOBILE BROADCASTING 5.113		
4995 - 5003 KHz STANDARD FREQUENCY & TIME SIGNAL (5000 KHz)	4995 - 5003 KHz STANDARD FREQUENCY & TIME SIGNAL (5000 KHz)		

**5.118** *Additional allocation:* in the United States, Mexico, Peru and Uruguay, the band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-03)

**5.119** *Additional allocation:* in Peru, the frequency band 3 500-3 750 kHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

- 5.120** (SUP - WRC-2000)
- 5.121** Not used.
- 5.122** *Alternative allocation:* in Bolivia, Chile, Ecuador, Paraguay and Peru, the frequency band 3 750-4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)
- 5.123** *Additional allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 3 900-3 950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.124** (SUP - WRC-2000)
- 5.125** *Additional allocation:* in Greenland, the band 3 950-4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.
- 5.126** In Region 3, the stations of those services to which the band 3 995-4 005 kHz is allocated may transmit standard frequency and time signals.
- 5.127** The use of the band 4 000-4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **52.220** and Appendix **17**).
- 5.128** Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-12)
- 5.129** (SUP - WRC-07)
- 5.130** The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles **31** and **52**. (WRC-07)
- 5.131** The frequency 4 209.5 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing techniques. (WRC-97)
- 5.132** The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix **17**).
- 5.132A** Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev.WRC-12)**. (WRC-12)
- 5.132B** *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 4 438-4 488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. (WRC-15)

5003 - 5005 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research	5003 - 5005 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research		
5005 - 5060 KHz FIXED BROADCASTING 5.113	5005 - 5060 KHz FIXED BROADCASTING 5.113		
5060 - 5250 KHz FIXED MOBILE except aeronautical mobile 5.133	5060 - 5250 KHz FIXED MOBILE except aeronautical mobile 5.133	5060 - 5070 KHz Government 5070 - 5140 KHz Non-Government 5140 - 5200 KHz Military 5200 - 5250 KHz Shared Band	
5250 - 5275 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	5250 - 5275 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	5250 - 5280 KHz Government	
5275 - 5450 KHz FIXED MOBILE except aeronautical mobile	5275 - 5450 KHz FIXED MOBILE except aeronautical mobile	5280 - 5380 KHz Non-Government 5380 - 5430 KHz Military 5430 - 5450 KHz Shared band	
5450 - 5480 KHz FIXED AERONAUTICAL MOBILE ( OR ) LAND MOBILE	5450 - 5480 KHz FIXED AERONAUTICAL MOBILE ( OR ) LAND MOBILE		
5480 - 5680 KHz AERONAUTICAL MOBILE ( R ) 5.111 5.115	5480 - 5680 KHz AERONAUTICAL MOBILE ( R ) 5.111 5.115		
5680 - 5730 KHz AERONAUTICAL MOBILE ( OR ) 5.111 5.115	5680 - 5730 KHz AERONAUTICAL MOBILE ( OR ) 5.111 5.115		
5730 - 5900 KHz FIXED Mobile except aeronautical mobile (R)	5730 - 5900 KHz FIXED Mobile except aeronautical mobile (R)	5730 - 5780 KHz Government 5780 - 5890 KHz Non-Government 5890 - 5900 KHz Military	
5900 - 5950 KHz BROADCASTING 5.134 5.136	5900 - 5950 KHz BROADCASTING 5.134 5.136		
5950 - 6200 KHz BROADCASTING	5950 - 6200 KHz BROADCASTING		
6200 - 6525 KHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	6200 - 6525 KHz MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137		
6525 - 6685 KHz AERONAUTICAL MOBILE ( R )	6525 - 6685 KHz AERONAUTICAL MOBILE ( R )		

6685 - 6765 KHz AERONAUTICAL MOBILE ( OR )	6685 - 6765 KHz AERONAUTICAL MOBILE ( OR )		
6765 - 7000 KHz FIXED MOBILE except aeronautical mobile (R) 5.138 5.139	6765 - 7000 KHz FIXED MOBILE except aeronautical mobile (R) 5.138 5.139	6765 - 6810 KHz Government 6810 - 6920 KHz Non-Government 6920 - 6980 KHz Military Band 6980 - 7000 KHz Government	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
7000 - 7100 KHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A	7000 - 7100 KHz AMATEUR AMATEUR-SATELLITE 5.140 5.141 5.141A		
7100 - 7200 KHz AMATEUR 5.141A 5.141B	7100 - 7200 KHz AMATEUR 5.141A 5.141B		
7 200-7 300 KHz BROADCASTING	7 200-7 300 KHz BROADCASTING		
7300 - 7400 KHz BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	7300 - 7400 KHz BROADCASTING 5.134 5.143 5.143A 5.143B 5.143C 5.143D	7350 - 7470 KHz Government	
7400-7450 KHz BROADCASTING 5.143A 5.143C	7400-7450 KHz BROADCASTING 5.143A 5.143C	7470 - 7480 KHz Non-Government	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

**5.133** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Niger, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 130-5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-12)

**5.A14** Stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas territories of the Netherlands in Region 2, stations in the amateur service using the frequency band 5 351.5-5 366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.). (WRC-15)

**5.133A** *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency bands 5 250-5 275 kHz and 26 200-26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)

**5.134** The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article **12**. Administrations are encouraged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution **517 (Rev.WRC-07)**. (WRC-07)

**5.135** (SUP - WRC-97)

**5.136** *Additional allocation:* frequencies in the band 5 900-5 950 kHz may be used by stations in the following services, communicating only within the boundary of the country in which they are located: fixed service (in all three Regions), land mobile service (in Region 1), mobile except aeronautical mobile (R) service (in Regions 2 and 3), on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

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

**5.138** The following bands:

6 765-6 795 kHz	(centre frequency 6 780 kHz),
433.05-434.79 MHz	(centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. <b>5.280</b> ,
61-61.5 GHz	(centre frequency 61.25 GHz),
122-123 GHz	(centre frequency 122.5 GHz), and
244-246 GHz	(centre frequency 245 GHz)

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

**5.138A** (SUP-WRC-12)

**5.139** (SUP-WRC-12)

**5.140** *Additional allocation:* in Angola, Iraq, Somalia and Togo, the frequency band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-15)

**5.141** *Alternative allocation:* in Egypt, Eritrea, Ethiopia, Guinea, Libya, Madagascar and Niger, the band 7 000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-12)

**5.141A** *Additional allocation:* in Uzbekistan and Kyrgyzstan, the bands 7 000-7 100 kHz and 7 100-7 200 kHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)

**5.141B** *Additional allocation:* in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Guinea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7 100-7 200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis. (WRC-15)

**5.141C** (SUP - WRC-12)

**5.142** The use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (WRC-12)

**5.143** *Additional allocation:* frequencies in the band 7 300-7 350 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**5.143A** In Region 3, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed service on a primary basis and land mobile service on a secondary basis, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

**5.143B** In Region 1, frequencies in the band 7 350-7 450 kHz may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located on condition that harmful interference is not caused to the broadcasting service. The total radiated power of each station shall not exceed 24 dBW. (WRC-12)

**5.143C** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Morocco, Mauritania, Niger, Oman, Qatar, the Syrian Arab Republic, Sudan, South Sudan, Tunisia and Yemen, the bands 7 350-7 400 kHz and 7 400-7 450 kHz are also allocated to the fixed service on a primary basis. (WRC-12)

**5.143D** In Region 2, frequencies in the band 7 350-7 400 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-12)

7450 - 8100 KHz FIXED MOBILE except aeronautical mobile (R) 5.144	7450 - 8100 KHz FIXED MOBILE except aeronautical mobile (R) 5.144	7480 - 8041 KHz Shared band 8041 - 8100 KHz Military	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
8100 - 8195 KHz FIXED MARITIME MOBILE	8100 - 8195 KHz FIXED MARITIME MOBILE		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
8195 - 8815 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	8195 - 8815 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
8815 - 8965 KHz AERONAUTICAL MOBILE ( R )	8815 - 8965 KHz AERONAUTICAL MOBILE ( R )		
8965 - 9040 KHz AERONAUTICAL MOBILE ( OR )	8965 - 9040 KHz AERONAUTICAL MOBILE ( OR )		
9040 - 9305 KHz FIXED	9040 - 9305 KHz FIXED		
9305 - 9355 KHz FIXED Radiolocation 5.145A	9305 - 9355 KHz FIXED Radiolocation 5.145A		
9355 - 9400 KHz FIXED	9355 - 9400 KHz FIXED		
9400 - 9500 KHz BROADCASTING 5.134 5.146	9400 - 9500 KHz BROADCASTING 5.134 5.146		
9500 - 9900 KHz BROADCASTING 5.147	9500 - 9900 KHz BROADCASTING 5.147		

9900 - 9995 KHz FIXED	9900 - 9995 KHz FIXED	9900 - 9955 Shared Band 9955 - 9995 Military	
9995 - 10003 KHz STANDARD FREQUENCY & TIME SIGNAL (10000 KHz) 5.111	9995 - 10003 KHz STANDARD FREQUENCY & TIME SIGNAL (10000 KHz) 5.111		
10003 - 10005 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research 5.111	10003 - 10005 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research 5.111		
10005 - 10100 KHz AERONAUTICAL MOBILE ( R ) 5.111	10005 - 10100 KHz AERONAUTICAL MOBILE ( R ) 5.111		
10100 - 10150 KHz FIXED Amateur	10100 - 10150 KHz FIXED Amateur	Shared Band	
10150 - 11175 KHz FIXED MOBILE except aeronautical mobile (R)	10150 - 11175 KHz FIXED MOBILE except aeronautical mobile (R)	10150 - 10300 KHz Government 10300 - 10900 KHz Non-Government 10900 - 11150 KHz Military 11150 - 11175 KHz Shared Band	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
11175 - 11275 KHz AERONAUTICAL MOBILE ( OR )	11175 - 11275 KHz AERONAUTICAL MOBILE ( OR )		
11275 - 11400 KHz AERONAUTICAL MOBILE ( R )	11275 - 11400 KHz AERONAUTICAL MOBILE ( R )		
11400 - 11600 KHz FIXED	11400 - 11600 KHz FIXED		
11600 - 11650 KHz BROADCASTING 5.134 5.146	11600 - 11650 KHz BROADCASTING 5.134 5.146		
11650 - 12050 KHz BROADCASTING 5.147	11650 - 12050 KHz BROADCASTING 5.147		
12050 - 12100 KHz BROADCASTING 5.134 5.146	12050 - 12100 KHz BROADCASTING 5.134 5.146		
12100 - 12230 KHz FIXED	12100 - 12230 KHz FIXED	Shared Band	
12230 - 13200 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145	12230 - 13200 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145		

13200 - 13260 KHz AERONAUTICAL MOBILE ( OR )	13200 - 13260 KHz AERONAUTICAL MOBILE ( OR )		
13260 - 13360 KHz AERONAUTICAL MOBILE ( R )	13260 - 13360 KHz AERONAUTICAL MOBILE ( R )		

**5.143E** (SUP - WRC-12)

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

**5.145** The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles **31** and **52**. (WRC-07)

**5.145A** Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed service. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev.WRC-12)**. (WRC-12)

**5.145B** *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency bands 9 305-9 355 kHz and 16 100-16 200 kHz are allocated to the fixed service on a primary basis. (WRC-15)

**5.146** *Additional allocation:* frequencies in the bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

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

**5.148** (SUP - WRC-97)

13360 - 13410 KHz FIXED RADIO ASTRONOMY 5.149	13360 - 13410 KHz FIXED RADIO ASTRONOMY 5.149	Shared Band	
13410 - 13450 KHz FIXED Mobile except aeronautical mobile (R)	13410 - 13450 KHz FIXED Mobile except aeronautical mobile (R)		
13450 - 13550 KHz FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A	13450 - 13550 KHz FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A		
13550 - 13570 KHz FIXED Mobile except aeronautical mobile (R) 5.150	13550 - 13570 KHz FIXED Mobile except aeronautical mobile (R) 5.150	Shared Band	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Memorandum Circular No. 03-08-2006 RFID

13570 - 13600 KHz BROADCASTING 5.134 5.151	13570 - 13600 KHz BROADCASTING 5.134 5.151		
13600 - 13800 KHz BROADCASTING	13600 - 13800 KHz BROADCASTING		
13800 - 13870 KHz BROADCASTING 5.134 5.151	13800 - 13870 KHz BROADCASTING 5.134 5.151		
13870 - 14000 KHz FIXED Mobile except aeronautical mobile (R)	13870 - 14000 KHz FIXED Mobile except aeronautical mobile (R)		
14000 - 14250 KHz AMATEUR AMATEUR-SATELLITE	14000 - 14250 KHz AMATEUR AMATEUR-SATELLITE		
14250 - 14350 KHz AMATEUR 5.152	14250 - 14350 KHz AMATEUR 5.152		
14350 - 14990 KHz FIXED Mobile except aeronautical mobile (R)	14350 - 14990 KHz FIXED Mobile except aeronautical mobile (R)	14350 - 14450 Government 14450 - 14890 Non-Government 14890 - 14990 Military	
14990 - 15005 KHz STANDARD FREQUENCY & TIME SIGNAL (15000 KHz) 5.111	14990 - 15005 KHz STANDARD FREQUENCY & TIME SIGNAL (15000 KHz) 5.111		
15005 - 15010 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research	15005 - 15010 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research		
15010 - 15100 KHz AERONAUTICAL MOBILE ( OR )	15010 - 15100 KHz AERONAUTICAL MOBILE ( OR )		
15100 - 15600 KHz BROADCASTING	15100 - 15600 KHz BROADCASTING		
15600 - 15800 KHz BROADCASTING 5.134 5.146	15600 - 15800 KHz BROADCASTING 5.134 5.146		
15800 - 16100 KHz FIXED 5.153	15800 - 16100 KHz FIXED 5.153		
16100 - 16200 KHz FIXED Radiolocation 5.145A	16100 - 16200 KHz FIXED Radiolocation 5.145A		

16200 - 16360 KHz FIXED	16200 - 16360 KHz FIXED		
16360 - 17410 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145	16360 - 17410 KHz MARITIME MOBILE 5.109 5.110 5.132 5.145		
17410 - 17480 KHz FIXED	17410 - 17480 KHz FIXED		
17480 - 17550 KHz BROADCASTING 5.134 5.146	17480 - 17550 KHz BROADCASTING 5.134 5.146		
17550 - 17900 KHz BROADCASTING	17550 - 17900 KHz BROADCASTING		
17900 - 17970 KHz AERONAUTICAL MOBILE ( R )	17900 - 17970 KHz AERONAUTICAL MOBILE ( R )		
17970 - 18030 KHz AERONAUTICAL MOBILE ( OR )	17970 - 18030 KHz AERONAUTICAL MOBILE ( OR )		

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

13 360-13 410 kHz,	4 950-4 990 MHz,	102-109.5 GHz,
25 550-25 670 kHz,	4 990-5 000 MHz,	111.8-114.25 GHz,
37.5-38.25 MHz,	6 650-6 675.2 MHz,	128.33-128.59 GHz,
73-74.6 MHz in Regions 1 and 3,	10.6-10.68 GHz,	129.23-129.49 GHz,
150.05-153 MHz in Region 1,	14.47-14.5 GHz,	130-134 GHz,
322-328.6 MHz,	22.01-22.21 GHz,	136-148.5 GHz,
406.1-410 MHz,	22.21-22.5 GHz,	151.5-158.5 GHz,
608-614 MHz in Regions 1 and 3,	22.81-22.86 GHz,	168.59-168.93 GHz,
1 330-1 400 MHz,	23.07-23.12 GHz,	171.11-171.45 GHz,
1 610.6-1 613.8 MHz,	31.2-31.3 GHz,	172.31-172.65 GHz,
1 660-1 670 MHz,	31.5-31.8 GHz in Regions 1 and 3,	173.52-173.85 GHz,
1 718.8-1 722.2 MHz,	36.43-36.5 GHz,	195.75-196.15 GHz,
2 655-2 690 MHz,	42.5-43.5 GHz,	209-226 GHz,
3 260-3 267 MHz,	48.94-49.04 GHz,	241-250 GHz,
3 332-3 339 MHz,	76-86 GHz,	252-275 GHz
3 345.8-3 352.5 MHz,	92-94 GHz,	
4 825-4 835 MHz,	94.1-100 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**). (WRC-07)

**5.149A** *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 13 450-13 550 kHz is allocated to the fixed service on a primary basis and to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-15)

**5.150** The following bands:

- |                   |   |
|-------------------|---|
| 13 553-13 567 kHz | (centre frequency 13 560 kHz),          |
| 26 957-27 283 kHz | (centre frequency 27 120 kHz),          |
| 40.66-40.70 MHz   | (centre frequency 40.68 MHz),           |
| 902-928 MHz       | in Region 2 (centre frequency 915 MHz), |
| 2 400-2 500 MHz   | (centre frequency 2 450 MHz),           |
| 5 725-5 875 MHz   | (centre frequency 5 800 MHz), and       |
| 24-24.25 GHz      | (centre frequency 24.125 GHz)           |

are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. **15.13**.

**5.151** *Additional allocation:* frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**5.152** *Additional allocation:* in Armenia, Azerbaijan, China, Côte d’Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-03)

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

18030 - 18052 KHz FIXED	18030 - 18052 KHz FIXED		
18052 - 18068 KHz FIXED Space Research	18052 - 18068 KHz FIXED Space Research		
18068 - 18168 KHz AMATEUR AMATEUR-SATELLITE 5.154	18068 - 18168 KHz AMATEUR AMATEUR-SATELLITE 5.154		
18168 - 18780 KHz FIXED Mobile except aeronautical mobile	18168 - 18780 KHz FIXED Mobile except aeronautical mobile		
18780 - 18900 KHz MARITIME MOBILE	18780 - 18900 KHz MARITIME MOBILE		
18900 - 19020 KHz BROADCASTING 5.134 5.146	18900 - 19020 KHz BROADCASTING 5.134 5.146		
19020 - 19680 KHz FIXED	19020 - 19680 KHz FIXED		

19680 - 19800 KHz MARITIME MOBILE 5.132	19680 - 19800 KHz MARITIME MOBILE 5.132		
19800 - 19990 KHz FIXED	19800 - 19990 KHz FIXED		
19990 - 19995 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research 5.111	19990 - 19995 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research 5.111		
19995 - 20010 KHz STANDARD FREQUENCY & TIME SIGNAL (20000 KHz) 5.111	19995 - 20010 KHz STANDARD FREQUENCY & TIME SIGNAL (20000 KHz) 5.111		
20010 - 21000 KHz FIXED Mobile	20010 - 21000 KHz FIXED Mobile	20010 - 20300 Government 20300 - 20700 Non-Government 20700 - 21000 Military	
21000 - 21450 KHz AMATEUR AMATEUR-SATELLITE	21000 - 21450 KHz AMATEUR AMATEUR-SATELLITE		
21450 - 21850 KHz BROADCASTING	21450 - 21850 KHz BROADCASTING		
21850 - 21870 KHz FIXED 5.155A 5.155	21850 - 21870 KHz FIXED 5.155A 5.155	Shared Band	
21870 - 21924 KHz FIXED 5.155B	21870 - 21924 KHz FIXED 5.155B		
21924 - 22000 KHz AERONAUTICAL MOBILE ( R )	21924 - 22000 KHz AERONAUTICAL MOBILE ( R )		
22000 - 22855 KHz MARITIME MOBILE 5.132 5.156	22000 - 22855 KHz MARITIME MOBILE 5.132 5.156		
22855 - 23000 KHz FIXED 5.156	22855 - 23000 KHz FIXED 5.156	Shared Band	
23000 - 23200 KHz FIXED MOBILE except aeronautical mobile (R) 5.156	23000 - 23200 KHz FIXED MOBILE except aeronautical mobile (R) 5.156	Shared Band	
23200 - 23350 KHz FIXED 5.156A AERONAUTICAL MOBILE (OR)	23200 - 23350 KHz FIXED 5.156A AERONAUTICAL MOBILE (OR)		

**5.154** *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-03)

**5.155** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis. (WRC-07)

**5.155A** In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-07)

**5.155B** The band 21 870-21 924 kHz is used by the fixed service for provision of services related to aircraft flight safety.

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

**5.156A** The use of the band 23 200-23 350 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

23350 - 24000 KHz FIXED MOBILE except aeronautical mobile 5.157	23350 - 24000 KHz FIXED MOBILE except aeronautical mobile 5.157	Shared Band	
24000 - 24450 KHz FIXED MOBILE	24000 - 24450 KHz FIXED MOBILE		
24450 - 24600 KHz FIXED MOBILE Radiolocation 5.132A	24450 - 24600 KHz FIXED MOBILE Radiolocation 5.132A		
24600 - 24890 KHz FIXED MOBILE	24600 - 24890 KHz FIXED MOBILE		
24890 - 24990 KHz AMATEUR AMATEUR-SATELLITE	24890 - 24990 KHz AMATEUR AMATEUR-SATELLITE		
24990 - 25005 KHz STANDARD FREQUENCY & TIME SIGNAL (25000 KHz)	24990 - 25005 KHz STANDARD FREQUENCY & TIME SIGNAL (25000 KHz)		
25005 - 25010 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research	25005 - 25010 KHz STANDARD FREQUENCY & TIME SIGNAL Space Research		
25010 - 25070 KHz FIXED MOBILE except aeronautical mobile	25010 - 25070 KHz FIXED MOBILE except aeronautical mobile	25010 - 25025 Government 25025 - 25055 Non-Government 25055 - 25070 Military	
25070 - 25210 KHz MARITIME MOBILE	25070 - 25210 KHz MARITIME MOBILE		

25210 - 25550 KHz FIXED MOBILE except aeronautical mobile	25210 - 25550 KHz FIXED MOBILE except aeronautical mobile	Shared Band	
25550 - 25670 KHz RADIO ASTRONOMY 5.149	25550 - 25670 KHz RADIO ASTRONOMY 5.149		
25670 - 26100 KHz BROADCASTING	25670 - 26100 KHz BROADCASTING		
26100 - 26175 KHz MARITIME MOBILE 5.132	26100 - 26175 KHz MARITIME MOBILE 5.132		
26175 - 26200 KHz FIXED MOBILE except aeronautical mobile	26175 - 26200 KHz FIXED MOBILE except aeronautical mobile	26175 - 26960 Shared Band	
26200 - 26350 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A	26200 - 26350 KHz FIXED MOBILE except aeronautical mobile Radiolocation 5.132A		
26350 - 27500 KHz FIXED MOBILE except aeronautical mobile 5.150	26350 - 27500 KHz FIXED MOBILE except aeronautical mobile 5.150	26960 - 27500 Citizen Band	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

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

**5.158** *Alternative allocation:* in Armenia, Belarus, Moldova, Uzbekistan and Kyrgyzstan, the frequency band 24 450-24 600 kHz is allocated to the fixed and land mobile services on a primary basis. (WRC-15)

27500 - 28000 KHz METEOROLOGICAL AIDS FIXED MOBILE	27500 - 28000 KHz METEOROLOGICAL AIDS FIXED MOBILE	27500 - 27640 Meteorological Aids 27640 - 27800 Non-Government 27800 - 28000 Military	
28.0 - 29.7 MHz AMATEUR AMATEUR-SATELLITE	28.0 - 29.7 MHz AMATEUR AMATEUR-SATELLITE		
29.7 - 30.005 MHz FIXED MOBILE	29.7 - 30.005 MHz FIXED MOBILE	29.70 - 29.77 MHz Government 29.77 - 29.95 MHz Non-Government 29.95 - 30.005 MHz Military	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
30.005 - 30.01 MHz SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	30.005 - 30.01 MHz SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

30.01 - 37.5 MHz FIXED MOBILE	30.01 - 37.5 MHz FIXED MOBILE	30.025 - 32.000 MHz 80 chs Non-Government simplex 32.025 - 33.000 MHz 40 chs Non-Government semi-duplex 33.025 - 34.000 MHz 40 chs Non-government semi-duplex 34.025 - 35.000 MHz 40 chs Military 35.025 - 36.000 MHz 40 chs Non-Government semi-duplex 36.025 - 37.000 MHz 60 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)  33.025 - 34.000 MHz (TX) 35.025 - 36.000 MHz (RX) 25.0 KHz channel spacing 2.0 MHz duplex separation
37.5 - 38.25 MHz FIXED MOBILE Radio Astronomy 5.149	37.5 - 38.25 MHz FIXED MOBILE Radio Astronomy 5.149	37.525 - 38.250 MHz 30 chs Military	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
38.25 - 39.5 MHz FIXED MOBILE	38.25 - 39.5 MHz FIXED MOBILE	38.275 - 39.975 MHz 68 chs Shared Band simplex	
39.5 - 39.986 MHz FIXED MOBILE RADIOLOCATION 5.132A	39.5 - 39.986 MHz FIXED MOBILE RADIOLOCATION 5.132A		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
39.986 - 40 MHz FIXED MOBILE RADIOLOCATION 5.132A Space Research	39.986 - 40 MHz FIXED MOBILE RADIOLOCATION 5.132A Space Research		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
40 - 40.02 MHz FIXED MOBILE Space Research	40 - 40.02 MHz FIXED MOBILE Space Research	40.000 - 40.980 MHz 20 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
40.02 - 40.98 MHz FIXED MOBILE 5.150	40.02 - 40.98 MHz FIXED MOBILE 5.150		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
40.98 - 41.015 MHz FIXED MOBILE	40.98 - 41.015 MHz FIXED MOBILE	40.980 - 41.015 MHz 30 chs simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

Space Research 5.160 5.161	Space Research 5.160 5.161		
41.015 - 42 MHz FIXED MOBILE 5.160 5.161 5.161A	41.015 - 42 MHz FIXED MOBILE 5.160 5.161 5.161A	41.025 - 42.050 MHz 42 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
42 - 42.5 MHz FIXED MOBILE 5.161	42 - 42.5 MHz FIXED MOBILE 5.161	42.075 - 43.000 MHz 38 chs Military	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
42.5 - 44 MHz FIXED MOBILE 5.160 5.161 5.161A	42.5 - 44 MHz FIXED MOBILE 5.160 5.161 5.161A	43.025 - 43.250 MHz 10 chs Non-Government simplex 43.275 - 44.000 MHz 30 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
44 - 47 MHz FIXED MOBILE 5.162 5.162A	44 - 47 MHz FIXED MOBILE 5.162 5.162A	44.025 - 47.000 MHz 120 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

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

**5.160** *Additional allocation:* in Botswana, Burundi, Dem. Rep. of the Congo and Rwanda, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)

**5.161** *Additional allocation:* in Iran (Islamic Republic of) and Japan, the band 41-44 MHz is also allocated to the radiolocation service on a secondary basis.

**5.161A** *Additional allocation:* in Korea (Rep. of) and the United States, the frequency bands 41.015-41.665 MHz and 43.35-44 MHz are also allocated to the radiolocation service on a primary basis. Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution **612 (Rev.WRC-12)**. (WRC-12)

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

**5.162** *Additional allocation:* in Australia, the band 44-47 MHz is also allocated to the broadcasting service on a primary basis. (WRC-12)

**5.162A** *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-12)

47 - 50 MHz FIXED MOBILE BROADCASTING 5.162A	47 - 50 MHz FIXED MOBILE BROADCASTING 5.162A	47.025 - 50.000 MHz 120 chs Shared Band simplex	
50 - 54 MHz AMATEUR 5.162A 5.166 5.167 5.167A 5.168 5.170	50 - 54 MHz AMATEUR 5.162A 5.166 5.167 5.167A 5.168 5.170		
54 - 68 MHz FIXED MOBILE BROADCASTING 5.162A	54 - 68 MHz BROADCASTING	54.000 - 60.000 MHz ... TV CH 2 60.000 - 66.000 MHz ... CH 3 66.000 - 72.000 MHz ... CH 4	
68 - 74.8 MHz FIXED MOBILE 5.149 5.176 5.179	68 - 74.8 MHz FIXED MOBILE BROADCASTING 5.176 5.149 5.179	72.025 - 74.800 MHz 112 chs Shared Band simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
74.8 - 75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181	74.8 - 75.2 MHz AERONAUTICAL RADIONAVIGATION 5.180 5.181		

**5.163** *Additional allocation:* in Armenia, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-12)

**5.164** *Additional allocation:* in Albania, Algeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency band 48.5-56.5 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band. (WRC-15)

**5.165** *Additional allocation:* in Angola, Cameroon, Congo (Rep. of the), Madagascar, Mozambique, Niger, Somalia, Sudan, South Sudan, Tanzania and Chad, the band 47-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

**5.166** *Alternative allocation:* in New Zealand, the band 50-51 MHz is allocated to the fixed and mobile services on a primary basis; the band 53-54 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-12)

**5.166** SUP (WRC-15)

- 5.167** *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Iran (Islamic Republic of), Pakistan and Singapore, the frequency band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)
- 5.167A** *Additional allocation:* in Indonesia and Thailand, the frequency band 50-54 MHz is also allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-15)
- 5.168** *Additional allocation:* in Australia, China and the Dem. People's Rep. of Korea, the band 50-54 MHz is also allocated to the broadcasting service on a primary basis.
- 5.169** *Alternative allocation:* in Botswana, Lesotho, Malawi, Namibia, the Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 50-54 MHz is allocated to the amateur service on a primary basis. In Senegal, the band 50-51 MHz is allocated to the amateur service on a primary basis. (WRC-12)
- 5.170** *Additional allocation:* in New Zealand, the frequency band 51-54 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)
- 5.171** *Additional allocation:* in Botswana, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)
- 5.172** *Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 54-68 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)
- 5.173** *Different category of service:* in the French overseas departments and communities in Region 2 and Guyana, the allocation of the frequency band 68-72 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**). (WRC-15)
- 5.174** (SUP - WRC-07)
- 5.175** *Alternative allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. In Latvia and Lithuania, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-07)
- 5.176** *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-07)
- 5.177** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)
- 5.178** *Additional allocation:* in Colombia, Cuba, El Salvador, Guatemala, Guyana, Honduras and Nicaragua, the band 73-74.6 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)
- 5.179** *Additional allocation:* in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-12)

**5.180** The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons. Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

**5.181** *Additional allocation:* in Egypt, Israel and the Syrian Arab Republic, the band 74.8-75.2 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 procedure invoked under No. **9.21**.(WRC-03)

75.2 - 75.4 MHz FIXED MOBILE 5.179	75.2 - 75.4 MHz FIXED MOBILE 5.179	75.225 - 75.400 MHz 8 chs Shared Band simplex 75.225 - 75.425 MHz Low Power System (50 mW/F3)	
75.4 - 87 MHz FIXED MOBILE 5.182 5.183 5.188	75.4 - 87 MHz FIXED MOBILE 5.182 5.183 5.188	75.450 - 75.950 MHz 22 chs Shared Band simplex 76.000 - 82.000 MHz ... TV CH 5	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
87 - 100 MHz FIXED MOBILE BROADCASTING	87 - 100 MHz BROADCASTING	87.50-88 MHz FM BC Extension 88.00-108 MHz 100chs FM Broadcasting	
100 - 108 MHz BROADCASTING 5.192 5.194	100 - 108 MHz BROADCASTING 5.192 5.194		
108 - 117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A	108 - 117.975 MHz AERONAUTICAL RADIONAVIGATION 5.197 5.197A		
117.975 - 137 MHz AERONAUTICAL MOBILE ( R ) 5.111 5.200 5.201 5.202	117.975 - 137 MHz AERONAUTICAL MOBILE ( R ) 5.111 5.200 5.201 5.202		
137 - 137.025 MHz SPACE OPERATION (space-to-earth) METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE-SATELLITE (space-to-earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137 - 137.025 MHz SPACE OPERATION (space-to-earth) METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE-SATELLITE (space-to-earth)5.208A 5.208B 5.209 SPACE RESEARCH (space-to-earth) FIXED MOBILE except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137.025 - 138.000 MHz 40 chs Shared Band simplex	Memorandum Circular No. 11-08-98 GMPCS
137.025 - 137.175 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth)	137.025 - 137.175 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth)		

SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-Satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208	SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-Satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208		Hospital Frequencies 137.365 MHz – calling
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**5.182** *Additional allocation:* in Western Samoa, the band 75.4-87 MHz is also allocated to the broadcasting service on a primary basis.

**5.183** *Additional allocation:* in China, Korea (Rep. of), Japan, the Philippines and the Dem. People’s Rep. of Korea, the band 76-87 MHz is also allocated to the broadcasting service on a primary basis.

**5.184** (SUP - WRC-07)

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

**5.186** (SUP - WRC-97)

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

**5.188** *Additional allocation:* in Australia, the band 85-87 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service in Australia is subject to special agreements between the administrations concerned.

**5.189** Not used.

**5.190** *Additional allocation:* in Monaco, the band 87.5-88 MHz is also allocated to the land mobile service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-97)

**5.191** Not used.

**5.192** *Additional allocation:* in China and Korea (Rep. of), the band 100-108 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

**5.193** Not used.

**5.194** *Additional allocation:* in Azerbaijan, Kyrgyzstan, Somalia and Turkmenistan, the band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-07)

**5.195** and **5.196** Not used.

**5.197** *Additional allocation:* in the Syrian Arab Republic, 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**. (WRC-12)

**5.197A** *Additional allocation:* the band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **413 (Rev.WRC-07)\***. The use of the band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. (WRC-07)

**5.198** (SUP - WRC-07)

**5.199** (SUP - WRC-07)

**5.200** In the band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article **31** for distress and safety purposes with stations of the aeronautical mobile service. (WRC-07)

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

**5.202** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-15)

**5.203** (SUP - WRC-07)

**5.203A** (SUP - WRC-07)

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\* *Note by the Secretariat:* This Resolution was revised by WRC-12.

**5.203B** (SUP - WRC-07)

- 5.204** *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Serbia, Singapore, Thailand and Yemen, the band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. **5.33**). (WRC-07)
- 5.205** *Different category of service:* in Israel and Jordan, the allocation of the band 137-138 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**).
- 5.206** *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, the Russian Federation, Finland, France, Georgia, Greece, Kazakhstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Syrian Arab Republic, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **5.33**). (WRC-2000)
- 5.207** *Additional allocation:* in Australia, the band 137-144 MHz is also allocated to the broadcasting service on a primary basis until that service can be accommodated within regional broadcasting allocations.
- 5.208** The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-97)
- 5.208A** In making assignments to space stations in the mobile-satellite service in the bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in the relevant ITU-R Recommendation. (WRC-07)
- 5.208B**\* In the frequency bands:  
137-138 MHz,  
387-390 MHz,  
400.15-401 MHz,  
1 452-1 492 MHz,  
1 525-1 610 MHz,  
1 613.8-1 626.5 MHz,  
2 655-2 690 MHz,  
21.4-22 GHz,  
Resolution **739 (Rev.WRC-15)** applies. (WRC-15)
- 5.209** The use of the bands 137-138 MHz, 148-150.05 MHz, 399.9-400.05 MHz, 400.15-401 MHz, 454-456 MHz and 459-460 MHz by the mobile-satellite service is limited to non-geostationary-satellite systems.(WRC-97)

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\* This provision was previously numbered as No. **5.347A**. It was renumbered to preserve the sequential order.

137.175 - 137.825 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	137.175 - 137.825 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208		
137.825 - 138 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-Satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208	137.825 - 138 MHz SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-Satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208		
138 - 143.6 MHz FIXED MOBILE Space Research (space-to-Earth) 5.207 5.213	138 - 143.6 MHz FIXED MOBILE	138.025 - 140.00 MHz 80 chs Government simplex 140.025 - 142.00 MHz 80 chs Military 142.025 - 143.60 MHz 64 chs Non-Government simplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
143.6 - 143.65 MHz FIXED MOBILE SPACE RESEARCH (space-to-earth) 5.207 5.213	143.6 - 143.65 MHz FIXED MOBILE	143.625 - 143.650 MHz 2 chs Shared Band simplex	
143.65 - 144 MHz FIXED MOBILE Space Research (space-to-Earth) 5.207 5.213	143.65 - 144 MHz FIXED MOBILE	143.675 - 144.000 MHz 14 chs Shared Band simplex	
144 - 146 MHz AMATEUR AMATEUR-SATELLITE 5.216	144 - 146 MHz AMATEUR AMATEUR-SATELLITE 5.216	144 - 146 MHz AMATEUR S5.120 AMATEUR-SATELLITE	
146 - 148 MHz AMATEUR FIXED MOBILE	146 - 148 MHz FIXED MOBILE	146.025 - 146.250 MHz 10 chs Government simplex 146.275 - 147.000 MHz 30 chs Non-Government semi-duplex	146.025 - 146.250 MHz (TX) 148.525 - 148.750 MHz (RX) 146.275 - 147.000 MHz (TX) 148.775 - 149.500 MHz (RX)

5.217		147.025 - 147.500 MHz 20 chs Government simplex 147.525 - 147.750 MHz 10 chs Non-Government simplex 147.775 - 148.000 MHz 10 chs Shared Band simplex	25.0 KHz channel spacing 2.5 MHz duplex separation
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**5.210** *Additional allocation:* in Italy, the Czech Rep. and the United Kingdom, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-07)

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

**5.212** *Alternative allocation:* in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Niger, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-12)

**5.213** *Additional allocation:* in China, the band 138-144 MHz is also allocated to the radiolocation service on a primary basis.

**5.214** *Additional allocation:* in Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Somalia, Sudan, South Sudan and Tanzania, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-12)

**5.215** Not used.

**5.216** *Additional allocation:* in China, the band 144-146 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.

**5.217** *Alternative allocation:* in Afghanistan, Bangladesh, Cuba, Guyana and India, the band 146-148 MHz is allocated to the fixed and mobile services on a primary basis.

148 - 149.9 MHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	148 - 149.9 MHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	148.025 - 148.250 MHz 10 chs Shared Band simplex 148.275 - 148.500 MHz 10 chs Shared Band simplex 148.525 - 148.750 MHz 10 chs Government semi-duplex 148.775 - 149.500 MHz 30 chs Non-Government semi-duplex 149.525 - 149.900 MHz 16 chs Shared Band simplex	148.025 - 148.250 MHz (TX) 150.525 - 150 750 MHz (RX) 25.0 KHz channel spacing 2.5 MHz duplex separation Memorandum Circular No. 11-08-98 GMPCS  Except ( RTS ) 149.175+/- 30 KHz 149.250+/- 30 KHz
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149.9 - 150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.244A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	149.9 - 150.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.244A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	150.075 - 150.300 MHz 10 chs Non-Government simplex 150.325 - 150.500 MHz 8 chs Shared Band simplex	
150.05 - 154 MHz FIXED MOBILE 5.225	150.05 - 154 MHz FIXED MOBILE 5.225	150.525 - 150.750 MHz 10 chs Government semi-duplex 150.775 - 151.250 MHz 20 chs Non-Government simplex	
154 - 156.4875 MHz FIXED MOBILE 5.225A 5.226	154 - 156.4875 MHz FIXED MOBILE 5.225A 5.226	151.275 - 151.750 MHz 20 chs Government simplex 151.775 - 152.500 MHz 30 chs Non-Government simplex	
156.4875 - 156.5625 MHz MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	156.4875 - 156.5625 MHz MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227	152.525 - 153.800 MHz 52 chs Police Band 153.825 - 155.000 MHz 48 chs	
156.5625-156.7625 MHz FIXED MOBILE 5.226	156.5625-156.7625 MHz FIXED MOBILE 5.226	Military 155.025 - 155.500 MHz 20 chs Non-Government simplex 155.525 - 155.750 MHz 10 chs Shared Band simplex 155.775 - 155.975 MHz 9 chs Government simplex 156.000 - 156.7625 MHz Maritime Mobile Band	
156.7625 - 156.7875 MHz MARITIME MOBILE Mobile-Satellite (Earth-to-space) 5.111 5.226 5.228	156.7625 - 156.7875 MHz MARITIME MOBILE Mobile-Satellite (Earth-to-space) 5.111 5.226 5.228		
156.7875 - 156.8125 MHz MARITIME MOBILE (distress and calling) 5.111 5.226	156.7875 - 156.8125 MHz MARITIME MOBILE (distress and calling) 5.111 5.226	156.800 MHz Distress & Calling Freq.	
156.8125 - 156.8375 MHz MARITIME MOBILE Mobile-Satellite (Earth-to-space) 5.111 5.226 5.228	156.8125 - 156.8375 MHz MARITIME MOBILE Mobile-Satellite (Earth-to-space) 5.111 5.226 5.228		
156.8375 - 161.9625 MHz FIXED MOBILE 5.226	156.8375 - 161.9625 MHz FIXED MOBILE 5.226	156.8375 - 157.450 MHz MARTIME MOBILE 157.475 - 157.700 MHz 10 chs Shared band semi-duplex	157.475 - 158.075 MHz (TX) 159.975 - 160.575 MHz (RX) 25.0 KHz channel spacing 2.5 MHz duplex separation
161.9625 - 161.9875 MHz	161.9625 - 161.9875 MHz	157.725 - 158.075 MHz 15 chs	

MARITIME MOBILE Aeronautical Mobile (OR) 5.228E Mobile-Satellite (Earth-to-space) 5.228F 5.226	MARITIME MOBILE Aeronautical Mobile (OR) 5.228E Mobile-Satellite (Earth-to-space) 5.228F 5.226	Non Government semi-duplex 158.100 - 158.750 MHz 27 chs Non Government simplex 158.775 - 159.950 MHz 48 chs	
161.9875 - 162.0125 MHz FIXED MOBILE 5.226	161.9875 - 162.0125 MHz FIXED MOBILE 5.226	Shared band simplex 159.975 - 160.200 MHz 10 chs Shared band semi-duplex 160.225 - 160.575 MHz 15 chs	
162.0125 - 162.0375 MHz MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-Satellite (Earth-to-space) 5.228F 5.226	162.0125 - 162.0375 MHz MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-Satellite (Earth-to-space) 5.228F 5.226	Non-Government semi-duplex 160.600 - 160.975 MHz MARITIME MOBILE 161.000 - 161.450 MHz 19 chs Non-Government simplex 161.475 - 162.050 MHz MARITIME MOBILE 162.075 - 162.200 MHz 6 chs Shared Band simplex	
162.0375 - 174 MHz FIXED MOBILE 5.226 5.230 5.231 5.232	162.0375 - 174 MHz FIXED MOBILE 5.226 5.230 5.231 5.232	162.325 - 162.615 MHz BC Remote Pick-up 162.625 - 162.875 MHz 11 chs Non-Government simplex 162.900 - 163.125 MHz 10 chs Government semi-duplex 163.150 - 163.875 MHz 30 chs Non-Government semi-duplex 163.900 - 164.350 MHz 19 chs Non-Government simplex 164.375 - 165.100 MHz 30 chs Non-Government semi-duplex 165.125 - 165.375 MHz 11 chs Shared Band simplex 165.400 - 165.625 MHz 10 chs Government semi-duplex 165.650 - 166.375 MHz 30 chs Non-Government semi-duplex 166.400 - 166.850 MHz 20 chs Shared Band simplex 166.875 - 167.600 MHz 30 chs Non-Government semi-duplex 167.625 - 167.850 MHz 10 chs	162.900 - 163.125 MHz (TX) 165.400 - 165.625 MHz (RX) 163.150 - 163.875 MHz (TX) 165.650 - 166.375 MHz (RX)  164.375 - 165.100 MHz (TX) 166.875 - 167.600 MHz (RX)  167.625 - 167.850 MHz (TX)

		Government semi-duplex 167.875 - 168.150 MHz 12 chs Government simplex 168.175 - 168.400 MHz 10 chs Non-Government simplex 168.425 - 169.025 MHz 25 chs Government semi-duplex 169.050 - 170.100 MHz 43 chs Shared Band simplex 170.125 - 170.350 MHz 10 chs Government semi-duplex 170.375 - 170.900 MHz 22 chs Shared Band simplex 170.925 - 171.525 MHz 25 chs Government semi-duplex 171.550 - 171.875 MHz 14 chs Shared Band simplex 171.900 - 172.400 MHz 21 chs Police Band 172.425 - 172.900 MHz 20 chs Non-Government simplex 172.925 - 174.000 MHz 44 chs Military Band	170.125 - 170.350 MHz (RX)  168.425 - 169.025 MHz (TX) 170.925 - 171.525 MHz (RX)  Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
174 - 223 MHz FIXED MOBILE BROADCASTING 5.233 5.238 5.240 5.245	174 - 216 MHz BROADCASTING	174.0 - 180.0 MHz ... TV CH 7 180.0 - 186.0 MHz ... CH 8 186.0 - 192.0 MHz ... CH 9 192.0 - 198.0 MHz ... CH 10 198.0 - 204.0 MHz ... CH 11 204.0 - 210.0 MHz ... CH 12 210.0 - 216.0 MHz ... CH 13	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
	216 - 223 MHz FIXED MOBILE	216.000 - 216.500 MHz 20 chs Shared Band simplex 216.525 - 217.000 MHz 20 chs Civic Action Group simplex 217.025 - 218.000 MHz 40 chs Government simplex 218.025 - 218.475 MHz 20 chs Non-Government simplex 218.250 - 218.475 MHz Telephone Line Extenders	Memorandum Circular No. 12-10-97 Telephone Line Extenders

		218.500 - 219.000 MHz 20 chs Non-Government simplex 219.025 - 220.000 MHz 40 chs Shared Band simplex 220.025 - 220.500 MHz 20 chs Shared Band semi-duplex 220.525 - 221.000 MHz 20 chs Civic Action Group semi-duplex 221.025 - 222.000 MHz 40 chs Shared band semi-duplex 222.025 - 223.000 MHz 40 chs Government semi-duplex	218.250-218.475 (Rx) paired with 326.250-326.475 (Tx)  220.025 - 223.000 MHz (TX) 223.025 - 226.000 MHz (RX)
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- 5.A116** The use of the frequency bands 161.9375-161.9625 MHz and 161.9875-162.0125 MHz by the maritime mobile-satellite (Earth-to-space) service is limited to the systems which operate in accordance with Appendix 18. (WRC-15)
- 5.218** *Additional allocation:* the band 148-149.9 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. 9.21. The bandwidth of any individual transmission shall not exceed 25 kHz.
- 5.219** The use of the band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the band 148-149.9 MHz.
- 5.220** The use of the frequency bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. (WRC-15)
- 5.221** Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe. (WRC-15)
- 5.222** SUP (WRC-15)
- 5.223** SUP (WRC-15)
- 5.224** (SUP - WRC-97)

**5.224A** SUP (WRC-15)

**5.224B** SUP (WRC-15)

**5.225** *Additional allocation:* in Australia and India, the band 150.05-153 MHz is also allocated to the radio astronomy service on a primary basis.

**5.225A** *Additional allocation:* in Algeria, Armenia, Azerbaijan, Belarus, China, the Russian Federation, France, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Viet Nam, the frequency band 154-156 MHz is also allocated to the radiolocation service on a primary basis. The usage of the frequency band 154-156 MHz by the radiolocation service shall be limited to space-object detection systems operating from terrestrial locations. The operation of stations in the radiolocation service in the frequency band 154-156 MHz shall be subject to agreement obtained under No. **9.21**. For the identification of potentially affected administrations in Region 1, the instantaneous field-strength value of 12 dB( $\mu$ V/m) for 10% of the time produced at 10 m above ground level in the 25 kHz reference frequency band at the border of the territory of any other administration shall be used. For the identification of potentially affected administrations in Region 3, the interference-to-noise ratio ( $I/N$ ) value of  $-6$  dB ( $N = -161$  dBW/4 kHz), or  $-10$  dB for applications with greater protection requirements, such as public protection and disaster relief (PPDR ( $N = -161$  dBW/4 kHz)), for 1% of the time produced at 60 m above ground level at the border of the territory of any other administration shall be used. In the frequency bands 156.7625-156.8375 MHz, 156.5125-156.5375 MHz, 161.9625-161.9875 MHz, 162.0125-162.0375 MHz, out-of-band e.i.r.p. of space surveillance radars shall not exceed  $-16$  dBW. Frequency assignments to the radiolocation service under this allocation in Ukraine shall not be used without the agreement of Moldova. (WRC-12)

**5.226** The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles **31** and **52**, and in Appendix **18**.

The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article **31** and Appendix **18**.

In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **18**).

Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)

**5.227** *Additional allocation:* the bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis. The use of these bands by the fixed and land mobile services shall not cause harmful interference to nor claim protection from the maritime mobile VHF radiocommunication service. (WRC-07)

**5.227A** (SUP - WRC-12)

**5.228** The use of the frequency bands 156.7625-156.7875 MHz and 156.8125-156.8375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system (AIS) emissions of long-range AIS broadcast messages (Message 27, see the most recent version of Recommendation ITU-R M.1371). With the exception of AIS emissions, emissions in these frequency bands by systems operating in the maritime mobile service for communications shall not exceed 1 W. (WRC-12)

**5.228A** The frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz may be used by aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)

- 5.228B** The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the fixed and land mobile services shall not cause harmful interference to, or claim protection from, the maritime mobile service. (WRC-12)
- 5.228C** The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS). The use of these frequency bands by the aeronautical mobile (OR) service is limited to AIS emissions from search and rescue aircraft operations. The AIS operations in these frequency bands shall not constrain the development and use of the fixed and mobile services operating in the adjacent frequency bands. (WRC-12)
- 5.228D** The frequency bands 161.9625-161.9875 MHz (AIS 1) and 162.0125-162.0375 MHz (AIS 2) may continue to be used by the fixed and mobile services on a primary basis until 1 January 2025, at which time this allocation shall no longer be valid. Administrations are encouraged to make all practicable efforts to discontinue the use of these bands by the fixed and mobile services prior to the transition date. During this transition period, the maritime mobile service in these frequency bands has priority over the fixed, land mobile and aeronautical mobile services. (WRC-12)
- 5.228E** The use of the automatic identification system in the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the aeronautical mobile (OR) service is limited to aircraft stations for the purpose of search and rescue operations and other safety-related communications. (WRC-12)
- 5.228F** The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the mobile-satellite service (Earth-to-space) is limited to the reception of automatic identification system emissions from stations operating in the maritime mobile service. (WRC-12)
- 5.229** *Alternative allocation:* in Morocco, the band 162-174 MHz is allocated to the broadcasting service on a primary basis. The use of this band shall be subject to agreement with administrations having services, operating or planned, in accordance with the Table which are likely to be affected. Stations in existence on 1 January 1981, with their technical characteristics as of that date, are not affected by such agreement.
- 5.230** *Additional allocation:* in China, the band 163-167 MHz is also allocated to the space operation service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.231** *Additional allocation:* in Afghanistan and China, the band 167-174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected. (WRC-12)
- 5.232** SUP (WRC-15)
- 5.233** *Additional allocation:* in China, the band 174-184 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis, subject to agreement obtained under No. **9.21**. These services shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.
- 5.234** SUP (WRC-15)
- 5.235** *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Malta, Monaco, Norway, the Netherlands, the United Kingdom, Sweden and Switzerland, the band 174-223 MHz is also allocated to the land mobile service on a primary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.
- 5.236** Not used.

**5.237** *Additional allocation:* in Congo (Rep. of the), Egypt, Eritrea, Ethiopia, Gambia, Guinea, Libya, Mali, Sierra Leone, Somalia and Chad, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

**5.238** *Additional allocation:* in Bangladesh, India, Pakistan and the Philippines, the band 200-216 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

**5.239** Not used.

**5.240** *Additional allocation:* in China and India, the band 216-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

**5.241** In Region 2, no new stations in the radiolocation service may be authorized in the band 216-225 MHz. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

**5.242** *Additional allocation:* in Canada, the band 216-220 MHz is also allocated to the land mobile service on a primary basis.

**5.243** *Additional allocation:* in Somalia, the band 216-225 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to not causing harmful interference to existing or planned broadcasting services in other countries.

**5.244** (SUP - WRC-97)

**5.245** *Additional allocation:* in Japan, the band 222-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

223 - 230 MHz FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 5.250	223 - 230 MHz FIXED MOBILE	223.025 - 223.500 MHz 20 chs Shared Band semi-duplex 223.525 - 224.000 MHz 20 chs Civic Action Group semi-duplex 224.025 - 225.000 MHz 40 chs Shared Band semi-duplex 225.025 - 226.000 MHz 40 chs Government semi-duplex 226.000 - 229.000 MHz 40 chs Shared Band simplex 229.025 - 229.975 MHz 40 chs Shared Band semi-duplex	229.025 - 229.975 MHz (TX) 232.025 - 232.975 MHz (RX)
230 - 235 MHz FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250	230 - 235 MHz FIXED MOBILE	230.000 - 231.000 MHz 40 chs Government simplex 231.025 - 232.000 MHz 40 chs Non-Government simplex 232.025 - 232.975 MHz 40 chs Shared Band semi-duplex 233.000 - 240.175 MHz 288 chs PRNS semi-duplex	233.000 - 240.175 MHz (RX) 241 .000 - 249.000 MHz (TX)

235 - 267 MHz FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	235 - 267 MHz FIXED MOBILE 5.111 5.256	240.200 - 240.975 MHz 32 chs Shared Band simplex 241.000 - 262.000 MHz 840 chs PRNS semi-duplex 262.025 - 264.000 MHz 80 chs Shared Band semi-duplex 264.025 - 265.000 MHz 40 chs Shared Band simplex 265.025 - 266.975 MHz 80 chs Shared Band semi-duplex	249.000 - 258.000 MHz (RX) 258.000 - 262.000 MHz (TX) 267.000 - 272.000 MHz (TX)
267 - 272 MHz FIXED MOBILE Space Operation (space-to-earth) 5.254 5.257	267 - 272 MHz FIXED MOBILE Space Operation (space-to-earth) 5.254 5.257	267.000 - 272.000 MHz 200 chs PRNS semi-duplex	
272 - 273 MHz FIXED MOBILE SPACE OPERATION (space-to-earth) 5.254	272 - 273 MHz FIXED MOBILE SPACE OPERATION (space-to-earth) 5.254	272.025 - 273.000 MHz 40 chs Shared Band	
273 - 312 MHz FIXED MOBILE 5.254	273 - 312 MHz FIXED MOBILE 5.254	273.025 - 278.975 MHz 239 chs Shared Band simplex 279.000 - 281.000 MHz 80 chs Paging 281.025 - 281.975 MHz 760 chs Shared Band simplex 282.000 - 299.000 MHz 680 chs PRNS semi-duplex	282.000 - 299.000 MHz (TX/RX)
312 - 315 MHz FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254 5.255	312 - 315 MHz FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254 5.255		
315 - 322 MHz FIXED MOBILE 5.254	315 - 322 MHz FIXED MOBILE 5.254		
322 - 328.6 MHz FIXED MOBILE RADIO ASTRONOMY	322 - 328.6 MHz FIXED MOBILE RADIO ASTRONOMY	300.000 - 315.000 MHz 120 chs BC – STL 315.025 - 316.000 MHz 40 chs BC - RPU semi-duplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) 315.025 - 316.000 MHz (TX) 318.025 - 319.000 MHz (RX)

5.149	5.149	316.025 - 318.00 MHz 80 chs BC - RPU simplex 318.025 - 319.000 MHz 40 chs BC - RPU semi-duplex 319.025 - 322.000 MHz 120 chs BC - RPU semi-duplex 322.025 - 325.000 MHz 120 chs BC - RPU semi-duplex 325.025-328.600 MHz 144 chs Shared Band	Memorandum Circular No. 7-6-98 SRRS 319.025 - 322.000 MHz (TX) 322.025 - 325.000 MHz (RX) 325.000 - 325.485 MHz SRRS channel spacing 12.5 KHz Memorandum Circular No. 12-10-97 Telephone Line Extenders 326.250-326.475 (Tx) paired with 218.250-218.475 (Rx)
328.6 - 335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259	328.6 - 335.4 MHz AERONAUTICAL RADIONAVIGATION 5.258 5.259		

**5.246** *Alternative allocation:* in Spain, France, Israel and Monaco, the band 223-230 MHz is allocated to the broadcasting and land mobile services on a primary basis (see No. **5.33**) on the basis that, in the preparation of frequency plans, the broadcasting service shall have prior choice of frequencies; and allocated to the fixed and mobile, except land mobile, services on a secondary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations in Morocco and Algeria.

**5.247** *Additional allocation:* in Saudi Arabia, Bahrain, the United Arab Emirates, Jordan, Oman, Qatar and Syrian Arab Republic, the band 223-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

**5.248** and **5.249** Not used.

**5.250** *Additional allocation:* in China, the band 225-235 MHz is also allocated to the radio astronomy service on a secondary basis.

**5.251** *Additional allocation:* in Nigeria, the band 230-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to agreement obtained under No. **9.21**.

**5.252** *Alternative allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**.

**5.253** Not used.

**5.254** The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. **5.256A**. (WRC-03)

**5.255** The bands 312-315 MHz (Earth-to-space) and 387-390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-geostationary-satellite systems. Such use is subject to coordination under No. **9.11A**.

**5.256** The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes. (WRC-07)

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

**5.257** The band 267-272 MHz may be used by administrations for space telemetry in their countries on a primary basis, subject to agreement obtained under No. **9.21**.

**5.258** The use of the band 328.6-335.4 MHz by the aeronautical radionavigation service is limited to Instrument Landing Systems (glide path).

**5.259** *Additional allocation:* in Egypt and the Syrian Arab Republic, the band 328.6-335.4 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 procedure invoked under No. **9.21**. (WRC-12)

335.4 - 387 MHz FIXED MOBILE 5.254	335.4 - 387 MHz FIXED MOBILE 5.254	335.425 – 359.975 MHz Shared Band 360.000 - 370.000 MHz (TX) 370.000 - 380.000 MHz (RX)	
387 - 390 MHz FIXED MOBILE Mobile-Satellite(space-to-Earth) 5.208A 5.208B 5.254 5.255	387 - 390 MHz FIXED MOBILE Mobile-Satellite(space-to-Earth) 5.208A 5.208B 5.254 5.255	Public Trunk Radio 380.000 - 385.000 MHz (TX) 390.000 - 395.000 MHz (RX) PPDR 385.000 - 390.000 MHz (TX) 395.000 - 399.900 MHz (RX)	Memorandum Circular No. 02-03-2013
390 - 399.9 MHz FIXED MOBILE 5.254	390 - 399.9 MHz FIXED MOBILE 5.254	Shared Users: Public utility service, etc.	
399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220	399.9-400.05 MHz MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220		
400.05 - 400.15 MHz STANDARD FREQUENCY & TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	400.05 - 400.15 MHz STANDARD FREQUENCY & TIME SIGNAL-SATELLITE (400.1 MHz) FIXED MOBILE 5.261 5.262		
400.15 - 401 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SAT (space-to-earth) MOBILE-SATELLITE (space-to-earth) 5.208A 5.208B 5.209	400.15 - 401 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SAT (space-to-earth) MOBILE-SATELLITE (space-to-earth) 5.208A 5.208B 5.209		

SPACE RESEARCH (space-to-earth) 5.263 Space Operation (space-to-earth) 5.262 5.264	SPACE RESEARCH (space-to-earth) 5.263 Space Operation (space-to-earth) 5.262 5.264		
401 - 402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-earth) EARTH EXPLORATION -SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE(Earth-to-space) Fixed Mobile except aeronautical mobile	401 - 402 MHz METEOROLOGICAL AIDS SPACE OPERATION (space-to-earth) EARTH EXPLORATION -SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE(Earth-to-space) Fixed Mobile except aeronautical mobile		Memorandum Circular No. 06-08-2015 Amending Section 1 and 2 of Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Medical Data Systems (MEDS)
402 - 403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION -SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE(Earth-to-space) Fixed Mobile except aeronautical mobile	402 - 403 MHz METEOROLOGICAL AIDS EARTH EXPLORATION -SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE(Earth-to-space) Fixed Mobile except aeronautical mobile		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
403 - 406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	403 - 406 MHz METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile		Memorandum Circular No. 06-08-2015 Amending Section 1 and 2 of Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Medical Data Systems (MEDS)
406 - 406.1 MHz MOBILE-SATELLITE (earth-to-space) 5.266 5.267	406 - 406.1 MHz MOBILE-SATELLITE (earth-to-space) 5.266 5.267		
406.1 - 410 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	406.1 - 410 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	406.125 - 406.475 MHz Shared Band 406.500 - 406.975 MHz Military Band 407.000 - 407.500 MHz Military Band 407.525 - 408.100 MHz Shared Band 408.125 - 409.000 MHz Police Band 409.025 - 410.000 MHz Shared Band	30 chs simplex 20 chs simplex 21 chs simplex 48 chs simplex 36 chs simplex 80 chs simplex

**5.A911** In the frequency band 403-410 MHz, Resolution **205 (Rev.WRC-15)** applies. (WRC-15)

**5.260** SUP (WRC-15)

**5.261** Emissions shall be confined in a band of 25 kHz about the standard frequency 400.1 MHz.

**5.262** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Singapore, Somalia, Tajikistan, Chad, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

**5.263** The band 400.15-401 MHz is also allocated to the space research service in the space-to-space direction for communications with manned space vehicles. In this application, the space research service will not be regarded as a safety service.

**5.264** The use of the band 400.15-401 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The power flux-density limit indicated in Annex 1 of Appendix 5 shall apply until such time as a competent world radiocommunication conference revises it.

**5.265** Not used.

**5.266** The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radiobeacons (see also Article **31**). (WRC-07)

**5.267** Any emission capable of causing harmful interference to the authorized uses of the band 406-406.1 MHz is prohibited.

410 - 420 MHz FIXED MOBILE except aeronautical mobile Space Research (space-to-space) 5.268	410 - 420 MHz FIXED MOBILE except aeronautical mobile Space Research (space-to-space) 5.268	410.000 - 430.000 MHz Broadband Wireless Access (BWA)		
420 - 430 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	420 - 430 MHz FIXED MOBILE except aeronautical mobile Radiolocation Amateur 5.270 5.269 5.271			
430 - 432 MHz RADIOLOCATION Amateur 5.271 5.276 5.278 5.279	430 - 432 MHz RADIOLOCATION FIXED MOBILE Amateur 5.271 5.276 5.278 5.279	430.125-431.000 MHz 431.125-432.000 MHz	semi-duplex	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Memorandum Order No. 04-03-2016 Police Band 431.125-432.000 MHz (TX) 436.125-437.000 MHz (RX)
432-438 MHz RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.271 5.276 5.278 5.279 5.281 5.282	432-438 MHz RADIOLOCATION FIXED MOBILE 5.276 Amateur Earth exploration-satellite (active) 5.279A	432.000-433.000 MHz 433.000-434.000 MHz 434.000-435.000 MHz 435.000-436.000 MHz 436.125-437.000 MHz 437.000-438.000 MHz	semi-duplex simplex   semi-duplex semi-duplex	Memorandum Circular 04-08-2015 Telemetry and Other Similar Systems 432.0-433.0 (TX) 437.0-438.0 (RX) 433.0-434.0 (TX/RX) Memorandum Order No. 04-03-2016

	5.271 5.276 5.278 5.279 5.281 5.282		Police Band 436.125-437.000 MHz (RX) 431.125-432.000 MHz (TX)
438-440 RADIOLOCATION Amateur 5.271 5.276 5.278 5.279	438-440 RADIOLOCATION FIXED MOBILE Amateur 5.271 5.276 5.278 5.279	438.0-439.0 439.0-440.0	
440.000 - 450.000 MHz FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	440.000 - 450.000 MHz FIXED MOBILE except aeronautical mobile Radiolocation Amateur 5.270 5.269 5.271 5.284 5.285 5.286	440.000 – 450.000 MHz Shared Band semi-duplex Relocation Band	440.000-444.975 MHz (TX) 445.000-449.975 MHz (RX)
450.000 - 455.000 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	450.000 - 455.000 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	450.000 - 470.000 MHz Broadband Wireless Access (BWA)	
455.000-456.000 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	455.000-456.000 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E		
456-459 MHz FIXED MOBILE 5.286AA 5.271 5.287 5.288	456-459 MHz FIXED MOBILE 5.286AA 5.271 5.287 5.288		
459-460 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	459-460 MHz FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E		
460-470 MHz FIXED MOBILE 5.286AA Meteorological-Satellite (space-to-Earth) 5.287 5.288 5.289 5.290	460-470 MHz FIXED MOBILE 5.286AA Meteorological-Satellite (space-to-Earth) 5.287 5.288 5.289 5.290		

**5.268** Use of the frequency band 410-420 MHz by the space research service is limited to space-to-space communication links with an orbiting, manned space vehicle. The power flux density at the surface of the Earth produced by emissions from transmitting stations of the space research service (space-to-space) in the frequency band 410-420 MHz shall not exceed  $-153$  dB(W/m<sup>2</sup>) for 0°  $-153 + 0.077 (\theta - 5)$  dB(W/m<sup>2</sup>) for 5° 70° and  $-148$  dB(W/m<sup>2</sup>) for 70° 90°, where  $\theta$  is the angle of arrival of the radio frequency wave and the reference bandwidth is 4 kHz. In

this frequency band, stations of the space research service (space-to-space) shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. **4.10** does not apply. (WRC-15)

- 5.269** *Different category of service:* in Australia, the United States, India, Japan and the United Kingdom, the allocation of the bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
- 5.270** *Additional allocation:* in Australia, the United States, Jamaica and the Philippines, the bands 420-430 MHz and 440-450 MHz are also allocated to the amateur service on a secondary basis.
- 5.271** *Additional allocation:* in Belarus, China, India, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-07)
- 5.272** (SUP - WRC-12)
- 5.273** (SUP - WRC-12)
- 5.274** *Alternative allocation:* in Denmark, Norway, Sweden and Chad, the bands 430-432 MHz and 438-440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)
- 5.275** *Additional allocation:* in Croatia, Estonia, Finland, Libya, The Former Yugoslav Republic of Macedonia, Montenegro and Serbia, the frequency bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)
- 5.276** *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Djibouti, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Libya, Malaysia, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Switzerland, Thailand, Togo, Turkey and Yemen, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis and the frequency bands 430-435 MHz and 438-440 MHz are also allocated, except in Ecuador, to the mobile, except aeronautical mobile, service on a primary basis. (WRC-15)
- 5.277** *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Mongolia, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-12)
- 5.278** *Different category of service:* in Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama and Venezuela, the allocation of the band 430-440 MHz to the amateur service is on a primary basis (see No. **5.33**).
- 5.279** *Additional allocation:* in Mexico, the bands 430-435 MHz and 438-440 MHz are also allocated on a primary basis to the land mobile service, subject to agreement obtained under No. **9.21**.
- 5.279A** The use of the frequency band 432-438 MHz by sensors in the Earth exploration satellite service (active) shall be in accordance with Recommendation ITU-R RS.1260-1. Additionally, the Earth exploration-satellite service (active) in the frequency band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. (WRC-15)

- 5.280** In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **15.13**. (WRC-07)
- 5.281** *Additional allocation:* in the French overseas departments and communities in Region 2 and India, the band 433.75-434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.
- 5.282** In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650-5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. **5.43**). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. **25.11**. The use of the bands 1 260-1 270 MHz and 5 650-5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.
- 5.283** *Additional allocation:* in Austria, the band 438-440 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.
- 5.284** *Additional allocation:* in Canada, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.
- 5.285** *Different category of service:* in Canada, the allocation of the band 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
- 5.286** The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. **9.21**.
- 5.286A** The use of the bands 454-456 MHz and 459-460 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-97)
- 5.286AA** The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). See Resolution **224 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)
- 5.286B** The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)
- 5.286C** The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall not constrain the development and use of the fixed and mobile services operating in accordance with the Table of Frequency Allocations. (WRC-97)
- 5.286D** *Additional allocation:* in Canada, the United States and Panama, the band 454-455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (WRC-07)
- 5.286E** *Additional allocation:* in Cape Verde, Nepal and Nigeria, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. (WRC-07)
- 5.287** Use of the frequency bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU-R M.1174-3. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned. (WRC-15)



		<p>Non-Government simplex  481.500- 482.125 MHz  Broadcasting (reserve)  482.150 - 486.225 MHz 164 chs  PRNS semi-duplex  486.250 - 487.475 MHz 50 chs  Shared band simplex  487.500 - 491.500 MHz 160 chs  PRNS semi-duplex  491.525 - 492.250 Mhz 30 chs  Shared Band semi-duplex  492.275 - 492.475 Mhz 8 chs  Shared Band simplex  492.500 - 496.500 MHz 160 chs  PRNS semi-duplex  496.525 - 497.250 MHz 30 chs  Shared Band semi-duplex  497.275 - 502.025 MHz 380 chs  PRNS semi-duplex  502.050 - 502.250 MHz 8 chs  Shared Band simplex  502.275 - 507.025 MHz 380 chs  PRNS semi-duplex  507.050 - 507.600 MHz 25 chs  Shared Band simplex  507.625 - 511.700 MHz 164 chs  PRNS semi-duplex  511.725 - 512.000 MHz 12 chs  Shared Band simplex</p>	<p>Telemetry  481.250-481.475 MHz (TX)  486.250-486.475 MHz (RX)</p>
<p>585.000 - 610.000 MHz  FIXED  MOBILE  BROADCASTING  RADIONAVIGATION  5.149 5.305 5.306 5.307</p>	<p>512.000 - 698.000 MHz  BROADCASTING</p>	<p>512.000 - 518.000 MHz ... TV CH 21  518.000 - 524.000 MHz ... TV CH 22  524.000 - 530.000 MHz ... TV CH 23  530.000 - 536.000 MHz ... TV CH 24  536.000 - 542.000 MHz ... TV CH 25  542.000 - 548.000 MHz ... TV CH 26  548.000 - 554.000 MHz ... TV CH 27  554.000 - 560.000 MHz ... TV CH 28  560.000 - 566.000 MHz ... TV CH 29  566.000 - 572.000 MHz ... TV CH 30  572.000 - 578.000 MHz ... TV CH 31</p>	<p>Memorandum Circular No. 03-05-2007  Short Range Devices (SRDs)</p>

		578.000 - 584.000 MHz ... TV CH 32 584.000 - 590.000 MHz ... TV CH 33 590.000 - 596.000 MHz ... TV CH 34 596.000 - 602.000 MHz ... TV CH 35 602.000 - 608.000 MHz ... TV CH 36 608.000 - 614.000 MHz ... TV CH 37 614.000 - 620.000 MHz ... TV CH 38 620.000 - 626.000 MHz ... TV CH 39 626.000 - 632.000 MHz ... TV CH 40 632.000 - 638.000 MHz ... TV CH 41 638.000 - 644.000 MHz ... TV CH 42 644.000 - 650.000 MHz ... TV CH 43 650.000 - 656.000 MHz ... TV CH 44 656.000 - 662.000 MHz ... TV CH 45 662.000 - 668.000 MHz ... TV CH 46 668.000 - 674.000 MHz ... TV CH 47 674.000 - 680.000 MHz ... TV CH 48 680.000 - 686.000 MHz ... TV CH 49 686.000 - 692.000 MHz ... TV CH 50 692.000 - 698.000 MHz ... TV CH 51	
610.000 - 890.000 MHz FIXED MOBILE 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.311A 5.320	698.000 - 890.000 MHz FIXED MOBILE 5.313A 5.317A	698.000 - 806.000 MHz Low to medium Capacity Terrestrial Relay Point-to-Point and Point-to-Multi-Point	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		806.000 - 821.000 MHz Public Trunked Radio System	Paired with: 851.0 - 866.0 MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		821.000 - 824.000 MHz Public Trunked Radio Service	Paired with 866-.0-869.0MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		824.000 - 849.000 MHz Cellular Mobile Telephone System	Paired with 869.0 - 890.0 MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		825.000 - 845.000 MHz 3G	Memorandum Circular No. 07-08-2005 Paired with 870.0 - 890.0 MHz
		849.000 - 851.000 MHz Terrestrial Link for One-Way Radio System	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		851.000 - 866.000 MHz Trunked Radio System	Paired with 806.0 - 821.0 MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		866.000 - 869.000 MHz	Paired with 821.0-824.0 MHz

		Public Trunked Radio Service	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		869.000 890.000 MHz Cellular Mobile Telephone System	Paired with 824.0-845.0 MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
		870.000 - 890.000 MHz 3G	Memorandum Circular No. 07-08-2005 Paired with 825.0-845.0 MHz

**5.idR2a** In the Bahamas, Barbados, Canada, the United States and Mexico, the frequency band 470-608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. In Mexico, the use of IMT in this frequency band will not start before 31 December 2018 and may be extended if agreed by the neighbouring countries. (WRC-15)

**5.idR2b** In the Bahamas, Barbados, Belize, Canada, Colombia, the United States and Mexico, the frequency band 614-698 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution **224 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. **9.21** and shall not cause harmful interference to or claim protection from the broadcasting service of neighbouring countries. Nos. **5.43** and **5.43A** apply. In Belize and Mexico, the use of IMT in this frequency band will not start before 31 December 2018 and may be extended if agreed by the neighbouring countries. (WRC-15)

**5.allocateR2** *Additional allocation:* in Belize and Colombia, the frequency band 614-698 MHz is also allocated to the mobile service on a primary basis. Stations of the mobile service within the frequency band are subject to agreement obtained under No. **9.21**. (WRC-15)

**5.291** *Additional allocation:* in China, the band 470-485 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under No. **9.21** and subject to not causing harmful interference to existing and planned broadcasting stations.

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

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

**5.293** *Different category of service:* in Canada, Chile, Cuba, the United States, Guyana, Jamaica and Panama, the allocation of the frequency bands 470-512 MHz and 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In the Bahamas, Barbados, Canada, Chile, Cuba, the United States, Guyana, Jamaica, Mexico and Panama, the allocation of the frequency bands 470-512 MHz and 614-698 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and Ecuador, the allocation of the frequency band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)

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

**5.295** Not used.

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

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

**5.298** *Additional allocation:* in India, the band 549.75-550.25 MHz is also allocated to the space operation service (space-to-Earth) on a secondary basis.

**5.299** Not used.

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

**5.301** Not used.

**5.302** (SUP - WRC-12)

**5.303** Not used.

**5.304** *Additional allocation:* in the African Broadcasting Area (see Nos. **5.10** to **5.13**), the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.

**5.305** *Additional allocation:* in China, the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.

**5.306** *Additional allocation:* in Region 1, except in the African Broadcasting Area (see Nos. **5.10** to **5.13**), and in Region 3, the band 608-614 MHz is also allocated to the radio astronomy service on a secondary basis.

**5.307** *Additional allocation:* in India, the band 608-614 MHz is also allocated to the radio astronomy service on a primary basis.

**5.308** Not used.

- 5.309** *Different category of service:* in El Salvador, the allocation of the frequency band 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-15)
- 5.310** (SUP - WRC-97)
- 5.311** (SUP - WRC-07)
- 5.311A** For the frequency band 620-790 MHz, see also Resolution **549 (WRC-07)**. (WRC-07)
- 5.312** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, in Bulgaria the frequency bands 646-686 MHz, 726-758 MHz, 766-814 MHz and 822-862 MHz, and in Poland the frequency band 860-862 MHz until 31 December 2017, are also allocated to the aeronautical radionavigation service on a primary basis. (WRC-15)
- 5.312A** In Region 1, the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution **COM4/4 (WRC-15)**. See also Resolution **224 (Rev.WRC-15)**. (WRC-15)
- 5.313** (SUP - WRC-97)
- 5.313A** The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, Philippines, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. In China, the use of IMT in this frequency band will not start until 2015. (WRC-15)
- 5.313B SUP.** (WRC-15)
- 5.314 SUP.** (WRC-15)
- 5.315 SUP.** (WRC-15)
- 5.316 SUP.** (WRC-15)
- 5.316A SUP.** (WRC-15)
- 5.316B** In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790-862 MHz is subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions **224 (Rev.WRC-15)** and **749 (Rev.WRC-15)** shall apply, as appropriate. (WRC-15)
- 5.317** *Additional allocation:* in Region 2 (except Brazil, the United States and Mexico), the frequency band 806-890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is intended for operation within national boundaries. (WRC-15)

- 5.317A** The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC-15)**, **COM4/4 (WRC-15)** and **749 (Rev.WRC-15)**, where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)
- 5.318** *Additional allocation:* in Canada, the United States and Mexico, the bands 849-851 MHz and 894-896 MHz are also allocated to the aeronautical mobile service on a primary basis, for public correspondence with aircraft. The use of the band 849-851 MHz is limited to transmissions from aeronautical stations and the use of the band 894-896 MHz is limited to transmissions from aircraft stations.
- 5.319** *Additional allocation:* in Belarus, the Russian Federation and Ukraine, the bands 806-840 MHz (Earth-to-space) and 856-890 MHz (space-to-Earth) are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of these bands by this service shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations and is subject to special agreements between the administrations concerned.
- 5.320** *Additional allocation:* in Region 3, the bands 806-890 MHz and 942-960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is limited to operation within national boundaries. In seeking such agreement, appropriate protection shall be afforded to services operating in accordance with the Table, to ensure that no harmful interference is caused to such services.
- 5.321** (SUP - WRC-07)
- 5.322** In Region 1, in the band 862-960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. **5.10** to **5.13**) excluding Algeria, Burundi, Egypt, Spain, Lesotho, Libya, Morocco, Malawi, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **9.21**. (WRC-12)
- 5.323** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz, in Bulgaria the bands 862-890.2 MHz and 900-935.2 MHz, in Poland the band 862-876 MHz until 31 December 2017, and in Romania the bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-12)

890.000 - 942.000 MHz FIXED MOBILE 5.317A BROADCASTING Radiolocation 5.327	890.000 - 942.000 MHz FIXED MOBILE 5.317A BROADCASTING Radiolocation 5.327	890.000 - 915.000 MHz Cellular Mobile Telephone System	Paired with 935.0 - 960.0 MHz
		915.000 - 916.000 MHz Point-to-Point Radio System	Memorandum Circular No. 03-08-2013 Wireless Data Networks and Devices 915-918 MHz
		916.000 - 918.000 MHz Point-to-Multipoint Radio System	
		918.000 - 920.000 MHz RFID	Memorandum Circular No. 03-08-2006 RFID
		920.000 - 925.000 MHz BC-Studio Transmitter Link (STL)	Channel spacing: 25.0 KHz
		925.000 - 935.000 MHz Cellular Mobile Telephone System	Paired with 880.0 - 890.0 MHz

942.000 - 960.000 MHz FIXED MOBILE 5.317A BROADCASTING 5.320	942.000 - 960.000 MHz FIXED MOBILE 5.317A  5.320	935.000 - 960.000 MHz Cellular Mobile Telephone System	Paired with 890.0 - 915.0 MHz
960-1 164 MHz AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328	960-1 164 MHz AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328		
1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	1 164-1 215 MHz AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A		
1215.0 - 1240.0 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	1215.0 - 1240.0 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) FIXED MOBILE 5.330 5.331 5.332		
1240.0 - 1300.0 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A	1240.0 - 1300.0 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) FIXED MOBILE Amateur 5.282 5.330 5.331 5.332 5.335 5.335A		

**5.A25** The frequency band 1 087.7-1 092.3 MHz is also allocated to the aeronautical mobile satellite (R) service (Earth-to-space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution **COM4/2 (WRC-15)** shall apply. (WRC-15)

**5.324** Not used.

- 5.325** *Different category of service:* in the United States, the allocation of the band 890-942 MHz to the radiolocation service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.
- 5.325A** *Different category of service:* in Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Mexico, Paraguay, Uruguay and Venezuela, the frequency band 902-928 MHz is allocated to the land mobile service on a primary basis. In Colombia, the frequency band 902-905 MHz is allocated to the land mobile service on a primary basis. (WRC-2015)
- 5.326** *Different category of service:* in Chile, the band 903-905 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.327** *Different category of service:* in Australia, the allocation of the band 915-928 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
- 5.327A** The use of the frequency band 960-1 164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **417 (Rev.WRC-15)**. (WRC-15)
- 5.328** 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. (WRC-2000)
- 5.328A** Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution **609 (Rev.WRC-07)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (WRC-07)
- 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 application of the provisions of Nos. **9.12, 9.12A** and **9.13**. Resolution **610(WRC-03)** shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution 610 (WRC-03) shall only apply to transmitting space stations. In accordance with No. **5.329A**, for systems and networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the provisions of Nos. **9.7, 9.12, 9.12A** and **9.13** shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space). (WRC-07)
- 5.329** 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, and no protection is claimed from, the radionavigation service authorized under No. **5.331**. Furthermore, the use of the radionavigation-satellite service in the band 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-to-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 radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table of Frequency Allocations. (WRC-07)
- 5.330** *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Nepal, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the band 1 215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)
- 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, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People’s Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 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-12)

**5.332** In the band 1 215-1 260 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 radionavigation-satellite service and other services allocated on a primary basis. (WRC-2000)

**5.333** (SUP - WRC-97)

**5.334** *Additional allocation:* in Canada and the United States, the band 1 350-1 370 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

**5.335** In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the Earthexploration-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. (WRC-97)

**5.335A** In the band 1 260-1 300 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. (WRC-2000)

1300.0 - 1350.0 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	1300.0 - 1350.0 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A		
1350.0 - 1400.0 MHz RADIOLOCATION 5.338A 5.149 5.334 5.339	1350.0 - 1400.0 MHz RADIOLOCATION 5.338A 5.149 5.334 5.339		
1400.0 - 1427.0 MHz EARTH EXPLORATION SATELLITE (Passive) RADIO ASTRONOMY SPACE RESEARCH (Passive) 5.340 5.341	1400.0 - 1427.0 MHz EARTH EXPLORATION SATELLITE (Passive) RADIO ASTRONOMY SPACE RESEARCH (Passive) 5.340 5.341		5.340: All emissions are prohibited in this band.
1427.0 - 1429.0 MHz SPACE OPERATION (earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341	1427.0 - 1429.0 MHz SPACE OPERATION (earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341	1427.0 - 1525.0 MHz Point-to-Multipoint Radio Comm. System 1427.0 - 1530.0 MHz Wireless Local Loop (WLL-LEC)	ITU-R Rep 379  WLL assignment is subject to frequency availability and on Non-Interference Basis (NIB).
1429.0 - 1452.0 MHz FIXED MOBILE 5.343 5.338A 5.341	1429.0 - 1452.0 MHz FIXED MOBILE 5.343 5.338A 5.341		

1452.0 - 1492.0 MHz FIXED MOBILE 5.343 BROADCASTING 5.345 BROADCASTING -SATELLITE 5.208B 5.341 5.344 5.345	1452.0 - 1492.0 MHz FIXED MOBILE 5.343 BROADCASTING 5.345 BROADCASTING -SATELLITE 5.208B 5.341 5.344 5.345		
1 492-1 518 MHz FIXED MOBILE 5.341	1 492-1 518 MHz FIXED MOBILE 5.341		
1518 -1525 MHz FIXED MOBILE MOBILE SATELLITE (space-to-earth) 5.348 5.348A 5.348B 5.351A 5.341	1518 -1525 MHz FIXED MOBILE MOBILE SATELLITE (space-to-earth) 5.348 5.348A 5.348B 5.351A 5.341		

**5.336** Not used.

**5.337** The use of the bands 1 300-1 350 MHz, 2 700-2 900 MHz and 9 000-9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.

**5.337A** The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service. (WRC-2000)

**5.R1a** In Region 1, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. (WRC-15)

**5.R2a** In Region 2, the frequency band 1 427-1 518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

**5.R3g** The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1 518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

**5.R1b** In Angola, Botswana, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gambia, Liberia, Madagascar, Malawi, Mali, Mozambique, Senegal, Zambia, Mauritius, Seychelles, Burundi, Kenya, Rwanda, Tanzania, Uganda, Gabon, Guinea, Burkina Faso, Ghana, Benin, Cameroon, South Africa, Jordan, Kuwait, Lesotho, Lebanon, Niger, Nigeria, Oman, Sudan, South Sudan, Zimbabwe, Togo, Palestine\*, Qatar, Morocco, Swaziland, Namibia, Mauritania, Bahrain, Djibouti, Egypt, Algeria, Saudi Arabia, United Arab Emirates and Iraq, the frequency band 1 452-1 492 MHz is identified for use by administrations listed above wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. See also Resolution **COM4/7 (WRC-15)**. (WRC-15)

**5.R3h** The frequency band 1 452-1 492 MHz is identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)** and Resolution **COM4/8 (WRC-15)**. The use of this frequency band by the above administrations for the implementation of IMT is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

**5.338** In Kyrgyzstan, Slovakia and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-12)

**5.338A** In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC-15)** applies. (WRC-15)

**5.339** The bands 1 370-1 400 MHz, 2 640-2 655 MHz, 4 950-4 990 MHz and 15.20-15.35 GHz are also allocated to the space research (passive) and Earth exploration-satellite (passive) services on a secondary basis.

**5.339A** (SUP - WRC-07)

**5.340** All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by No. <b>5.422</b> ,
10.68-10.7 GHz,	except those provided for by No. <b>5.483</b> ,
15.35-15.4 GHz,	except those provided for by No. <b>5.511</b> ,
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 GHz <sup>1</sup> ,	
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
109.5-111.8 GHz,	
114.25-116 GHz,	

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<sup>1</sup> **5.340.1** The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (WRC-97)

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. (WRC-03)

- 5.341** In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.
- 5.342** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Uzbekistan, Kyrgyzstan and Ukraine, the frequency band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis, exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the frequency band 1 452-1 492 MHz is subject to agreement between the administrations concerned. (WRC-15)
- 5.343** In Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.
- 5.344** *Alternative allocation:* in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **5.343**).
- 5.345** Use of the band 1 452-1 492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (WARC-92)\*.
- 5.346** Not used.
- 5.347** (SUP - WRC-07)
- 5.347A**\*\* (SUP - WRC-07)
- 5.348** The use of the band 1 518-1 525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. **5.43A** does not apply. (WRC-03)
- 5.348A** In the band 1518-1525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be  $-150$  dB(W/m<sup>2</sup>) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix 5. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **5.43A** does not apply. (WRC-03)

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\* *Note by the Secretariat:* This Resolution was revised by WRC-03.

\*\* *Note by the Secretariat:* This provision has been modified by WRC-07, and subsequently renumbered No. **5.208B** in order to preserve the sequential order.

**5.348B** In the band 1 518-1 525 MHz, stations in the mobile-satellite service shall not claim protection from aeronautical mobile telemetry stations in the mobile service in the territory of the United States (see Nos. **5.343** and **5.344**) and in the countries listed in No. **5.342**. No. **5.43A** does not apply. (WRC-03)

**5.348C** (SUP - WRC-07)

1525.0 - 1530.0 MHz SPACE OPERATION (space-to-earth) FIXED MOBILE-SATELLITE (space-to-earth) 5.208B 5.351A Earth Exploration Satellite Mobile 5.349 5.341 5.351 5.352A 5.354	1525.0 - 1530.0 MHz SPACE OPERATION (space-to-earth) FIXED MOBILE-SATELLITE (space-to-earth) 5.208B 5.351A Earth Exploration Satellite Mobile 5.349 5.341 5.351 5.352A 5.354		
1530.0 - 1535.0 MHz SPACE OPERATION (space-to-earth) MOBILE SATELLITE (space-to-earth) 5.208B 5.351A 5.353A Earth Exploration Satellite Fixed Mobile 5.343 5.341 5.351 5.354	1530.0 - 1535.0 MHz SPACE OPERATION (space-to-earth) MOBILE SATELLITE (space-to-earth) 5.208B 5.351A 5.353A Earth Exploration Satellite Fixed Mobile 5.343 5.341 5.351 5.354	1530.0 - 1559.0 MHz GMPCS (Space-to-Earth)	
1535 - 1559 MHz MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A 5.362A	1535 - 1559 MHz MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A 5.362A		
1559 - 1610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SAT (space-to-earth) (space-to-space) 5.208B 5.328B 5.329A 5.341 5.362B 5.362C	1559 - 1610 MHz AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SAT (space-to-earth) (space-to-space) 5.208B 5.328B 5.329A 5.341 5.362B 5.362C		

**5.349** *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-07)

**5.350** *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the band 1 525-1 530 MHz is also allocated to the aeronautical mobile service on a primary basis. (WRC-2000)

**5.351** The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5-1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.

**5.351A** For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-07)** and **225 (Rev.WRC-07)\***. (WRC-07)

**5.352** (SUP - WRC-97)

**5.352A** In the frequency band 1 525-1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Algeria, Saudi Arabia, Egypt, France and French overseas communities of Region 3, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Viet Nam and Yemen notified prior to 1 April 1998. (WRC-15)

**5.353** (SUP - WRC-97)

**5.353A** In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-2000)\*\*** shall apply.) (WRC-2000)

**5.354** The use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite services is subject to coordination under No. **9.11A**.

**5.355** *Additional allocation:* in Bahrain, Bangladesh, Congo (Rep. of the), Djibouti, Egypt, Eritrea, Iraq, Israel, Kuwait, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis. (WRC-12)

**5.356** The use of the band 1 544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article **31**).

**5.357** Transmissions in the band 1 545-1 555 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.

**5.357A** In applying the procedures of Section II of Article 9 to the mobile-satellite service in the frequency bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (Rev.WRC-12)** shall apply.) (WRC-12)

**5.358** (SUP - WRC-97)

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\* *Note by the Secretariat:* This Resolution was revised by WRC-12.

\*\* *Note by the Secretariat:* This Resolution was revised by WRC-07 and WRC-12.

**5.359** *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Cameroon, the Russian Federation, France, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People’s Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands. (WRC-15)

**5.360 to 5.362** (SUP - WRC-97)

**5.362A** In the United States, in the bands 1 555-1 559 MHz and 1 656.5-1 660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (WRC-97)

**5.362B** SUP (WRC-15)

**5.362C** SUP (WRC-15)

**5.363** (SUP - WRC-07)

1610 - 1610.6 MHz 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 - 1610.6 MHz 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	1610.0-1626.5 MHz GMPCS (bidirectional)	
1610.6 - 1613.8 MHz 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	1610.6 - 1613.8 MHz 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 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-Satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	1613.8 - 1626.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-Satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372		
1626.5 - 1660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	1626.5 - 1660 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A	1631.0-1660.0 MHz GMPCS (Earth-to-Space)	

5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376		
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- 5.364** The use of the band 1 610-1 626.5 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 1 613.8-1 626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**.
- 5.366** The band 1 610-1 626.5 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 frequency band 1 610-1 626.5 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-12)
- 5.368** With respect to the radiodetermination-satellite and mobile-satellite services the provisions of No. **4.10** do not apply in the band 1 610-1 626.5 MHz, with the exception of the aeronautical radionavigation-satellite service.
- 5.369** *Different category of service:* in Angola, Australia, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Lebanon, Liberia, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, the Dem. Rep. of the Congo, Sudan, South Sudan, Togo and Zambia, the allocation of the band 1 610-1 626.5 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-12)
- 5.370** *Different category of service:* in Venezuela, the allocation to the radiodetermination-satellite service in the band 1 610-1 626.5 MHz (Earth-to-space) is on a secondary basis.
- 5.371** *Additional allocation:* in Region 1, the band 1 610-1 626.5 MHz (Earth-to-space) is also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. **9.21**. (WRC-12)
- 5.372** Harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. **29.13** applies).
- 5.373** Not used.
- 5.373A** (SUP - WRC-97)
- 5.374** Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5-1 634.5 MHz and 1 656.5-1 660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. **5.359**. (WRC-97)

**5.375** The use of the band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress and safety communications (see Article **31**).

**5.376** Transmissions in the band 1 646.5-1 656.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.

1660.0 - 1660.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	1660.0 - 1660.5 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A		
1660.5 - 1668.0 MHz RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	1660.5 - 1668.0 MHz RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A		
1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	1 668-1 668.4 MHz MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A		
1668.4 - 1670 MHz METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.279E	1668.4 - 1670 MHz METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.279E		
1670 - 1675 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	1670 - 1675 MHz METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A		
1675 - 1690 MHz	1675 - 1690 MHz		

METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.341		
1690 - 1700 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-earth) 5.289 5.341 5.381	1690 - 1700 MHz METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-earth) 5.289 5.341 5.381		
1700 - 1710 MHz FIXED METEOROLOGICAL -SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.289 5.341 5.384	1700 - 1710 MHz FIXED METEOROLOGICAL -SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.289 5.341 5.384		

**5.376A** Mobile earth stations operating in the band 1 660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. (WRC-97)

**5.377** (SUP - WRC-03)

**5.378** Not used.

**5.379** *Additional allocation:* in Bangladesh, India, Indonesia, Nigeria and Pakistan, the band 1 660.5-1 668.4 MHz is also allocated to the meteorological aids service on a secondary basis.

**5.379A** Administrations are urged to give all practicable protection in the band 1 660.5-1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4-1 668.4 MHz as soon as practicable.

**5.379B** The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 668-1 668.4 MHz, Resolution **904 (WRC-07)** shall apply. (WRC-07)

**5.379C** In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed  $-181$  dB(W/m<sup>2</sup>) in 10 MHz and  $-194$  dB(W/m<sup>2</sup>) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. (WRC-03)

**5.379D** For sharing of the band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution **744 (Rev.WRC-07)** shall apply. (WRC-07)

**5.379E** In the band 1 668.4-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4-1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. (WRC-03)

**5.380** (SUP - WRC-07)

**5.380A** In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified before 1 January 2004. Any new assignment to these earth stations in this band shall also be protected from harmful interference from stations in the mobile-satellite service. (WRC-07)

**5.381** *Additional allocation:* in Afghanistan, Cuba, India, Iran (Islamic Republic of) and Pakistan, the band 1 690-1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)

**5.382** *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-15)

**5.383** Not used.

**5.384** *Additional allocation:* in India, Indonesia and Japan, the band 1 700-1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis. (WRC-97)

1710 - 1930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	1710 - 1930 MHz FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	1710 - 1720 MHz WLL – LEC 1720 - 1785 MHz CMTS  1805 - 1815 MHz WLL – LEC 1815 - 1880 MHz CMTS 1880-1900 MHz 3G 1900-1910 MHz BWA 1920-1980 MHz 3G	Paired with 1805-1815 MHz  Paired with 1815-1880 MHz Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Paired with 1710-1720 MHz  Paired with 1720-1785 MHz  Memorandum Circular No. 07-08-2005  Paired with 1980-1990 MHz  Memorandum Circular No. 07-08-2005 Paired with 2110-2170 MHz
1930-1970 MHz FIXED MOBILE 5.388A 5.388B 5.388	1930-1970 MHz FIXED MOBILE 5.388A 5.388B 5.388		
1970-1980 MHz FIXED MOBILE 5.388A 5.388B 5.388	1970-1980 MHz FIXED MOBILE 5.388A 5.388B 5.388		
1980 - 2010 MHz FIXED MOBILE MOBILE-SATELLITE (earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	1980 - 2010 MHz FIXED MOBILE MOBILE-SATELLITE (earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	1980.0 - 2010.0 MHz GMPCS (Earth-to-Space) 1980-1990 MHz BWA	Memorandum Circular No. 11-08-98 GMPCS Paired with 1900-1910 MHz
2010 - 2025 MHz FIXED	2010 - 2025 MHz FIXED	2010-2025 MHz 3G	Memorandum Circular No. 07-08-2005

MOBILE 5.388A 5.388B 5.388	MOBILE 5.388A 5.388B 5.388		
2025 - 2110 MHz SPACE OPERATION (earth-to-space) (space-to-earth) EARTH EXPLORATION-SATELLITE (earth-to-space) (space-to-earth) FIXED MOBILE 5.391 SPACE RESEARCH (earth-to-space) (space-to-earth) 5.392	2025 - 2110 MHz SPACE OPERATION (earth-to-space) (space-to-earth) EARTH EXPLORATION-SATELLITE (earth-to-space) (space-to-earth) FIXED MOBILE 5.391 SPACE RESEARCH (earth-to-space) (space-to-earth) 5.392	2025 - 2110 MHz Point-to-Point Radio Comm. System	ITU-R Rec F.1098
2110 - 2120 MHz FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space)(earth-to-space) 5.388	2110 - 2120 MHz FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space)(earth-to-space) 5.388	2110-2170 MHz 3G	Memorandum Circular No. 07-08-2005 Paired with 1920-1980 MHz
2120 - 2160 MHz FIXED MOBILE 5.388A 5.388B 5.388	2120 - 2160 MHz FIXED MOBILE 5.388A 5.388B 5.388		
2160 - 2170 MHz FIXED MOBILE 5.388A 5.388B 5.388	2160 - 2170 MHz FIXED MOBILE 5.388A 5.388B 5.388		

**5.384A** The frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz or 2 500-2 690 MHz, and portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

**5.385** *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. (WRC-2000)

**5.386** *Additional allocation:* the frequency band 1 750-1 850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2 (except in Mexico), in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. **9.21**, having particular regard to troposcatter systems. (WRC-15)

**5.387** *Additional allocation:* in Belarus, Georgia, Kazakhstan, Kyrgyzstan, Romania, Tajikistan and Turkmenistan, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-12)

**5.388** The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution **212 (Rev.WRC-15)** (see also Resolution **223 (Rev.WRC-15)**). (WRC-15)

- 5.388A** In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications (IMT), in accordance with Resolution **221 (Rev.WRC-07)**. Their use by IMT applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-12)
- 5.388B** In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the bands referred to in No. **5.388A**, shall not exceed a co-channel power flux-density of  $-127 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS. (WRC-12)
- 5.389** Not used.
- 5.389A** The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. 9.11A and to the provisions of Resolution **716 (Rev.WRC-2000)**\*. (WRC-07)
- 5.389B** The use of the band 1 980-1 990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela.
- 5.389C** The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service is subject to coordination under No. 9.11A and to the provisions of Resolution **716 (Rev.WRC-2000)**\*. (WRC-07)
- 5.389D** (SUP - WRC-03)
- 5.389E** The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite service in Region 2 shall not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3.
- 5.389F** In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services. (WRC-2000)
- 5.390** (SUP - WRC-07)
- 5.391** In making assignments to the mobile service in the frequency bands 2 025-2 110 MHz and 2 200-2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154-0, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-15)

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\* *Note by the Secretariat:* This Resolution was revised by WRC-12.

**5.392** Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geostationary satellites, in the space research, space operations and Earth exploration-satellite services in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions of those services and in those bands between geostationary and non-geostationary satellites.

**5.392A** (SUP - WRC-07)

2170 - 2200 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-earth) 5.351A 5.388 5.389A 5.389F	2170 - 2200 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-earth) 5.351A 5.388 5.389A 5.389F	2170.0 - 2200.0 MHz GMPCS (Space-to-Earth)	Memorandum Circular No. 11-08-98 GMPCS
2200 - 2290 MHz SPACE OPERATION (space-to-Earth)(space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth)(space-to-space) 5.392	2200 - 2290 MHz SPACE OPERATION (space-to-Earth)(space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth)(space-to-space) 5.392	2200 - 2290 MHz Point-to-Point Radio Comm. System	ITU-R Rec F.1098
2290 - 2300 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-earth)	2290 - 2300 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-earth)		
2300 - 2450 MHz FIXED MOBILE 5.384A RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396	2300 - 2450 MHz FIXED MOBILE 5.384A RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396	2300-2400 MHz BWA 2400-2483 MHz	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)  Memorandum Circular No. 03-08-2006 RFID
2450 - 2483.5 MHz FIXED MOBILE RADIOLOCATION 5.150	2450 - 2483.5 MHz FIXED MOBILE RADIOLOCATION 5.150		Memorandum Circular No. 09-09-2003 Wireless Data Networks and Devices
2483.5 - 2500 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A	2483.5 - 2500 MHz FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A	2483.5 - 2500.0 MHz GMPCS (Space-to-Earth)	Memorandum Circular No. 11-08-98 GMPCS

RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-earth) 5.398 5.150 5.401 5.402	RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-earth) 5.398 5.150 5.401 5.402		
2500 - 2520 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-earth) 5.351A 5.407 5.414 5.414A 5.404 5.415A	2500 - 2520 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-earth) 5.351A 5.407 5.414 5.414A 5.404 5.415A	2500-2690 MHz BWA	

**5.393** *Additional allocation:* in Canada, the United States and India, the frequency band 2 310-2 360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-15)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. (WRC-15)

**5.394** In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-07)

**5.395** In France and Turkey, the use of the band 2 310-2 360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service. (WRC-03)

**5.396** Space stations of the broadcasting-satellite service in the band 2 310-2 360 MHz operating in accordance with No. 5.393 that may affect the services to which this band is allocated in other countries shall be coordinated and notified in accordance with Resolution **33 (Rev.WRC-97)\***. Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use.

**5.397** (SUP - WRC-12)

**5.398** In respect of the radiodetermination-satellite service in the band 2 483.5-2 500 MHz, the provisions of No. **4.10** do not apply.

**5.398A** *Different category of service:* In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, the band 2 483.5-2 500 MHz is allocated on a primary basis to the radiolocation service. The radiolocation stations in these countries shall not cause harmful interference to, or claim protection from, stations of the fixed, mobile and mobile-satellite services operating in accordance with the Radio Regulations in the frequency band 2 483.5-2 500 MHz. (WRC-12)

**5.399** Except for cases referred to in No. **5.401**, stations of the radiodetermination-satellite service operating in the frequency band 2 483.5-2 500 MHz for which notification information is received by the Bureau after 17 February 2012, and the service area of which includes Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Ukraine, shall not cause harmful interference to, and shall not claim protection from stations of the radiolocation service operating in these countries in accordance with No. **5.398A**. (WRC-12)

**5.400** (SUP - WRC-12)

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\* *Note by the Secretariat:* This Resolution was revised by WRC-03.

- 5.401** In Angola, Australia, Bangladesh, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Swaziland, Togo and Zambia, the frequency band 2 483.5-2 500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. **9.21** from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information. (WRC-15)
- 5.402** The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. **9.11A**. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.
- 5.403** Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply. (WRC-07)
- 5.404** *Additional allocation:* in India and Iran (Islamic Republic of), the band 2 500-2 516.5 MHz may also be used for the radiodetermination-satellite service (space-to-Earth) for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**.
- 5.405** (SUP - WRC-12)
- 5.406** Not used.
- 5.407** In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed  $-152$  dB(W/(m<sup>2</sup> 4 kHz)) in Argentina, unless otherwise agreed by the administrations concerned.
- 5.408** (SUP - WRC-2000)
- 5.409** (SUP - WRC-07)
- 5.410** The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. No. **9.21** does not apply to tropospheric scatter links situated entirely outside Region 1. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-12)
- 5.411** (SUP - WRC-07)
- 5.412** *Alternative allocation:* in Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-12)
- 5.413** In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690-2 700 MHz.
- 5.414** The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**. (WRC-07)

**5.414A** In Japan and India, the use of the bands 2 500-2 520 MHz and 2 520-2 535 MHz, under No. **5.403**, by a satellite network in the mobile-satellite service (space-to-Earth) is limited to operation within national boundaries and subject to the application of No. **9.11A**. The following pfd values shall be used as a threshold for coordination under No. **9.11A**, for all conditions and for all methods of modulation, in an area of 1 000 km around the territory of the administration notifying the mobile-satellite service network:

- 136 dB(W/(m<sup>2</sup> · MHz)) for 0° ≤ θ ≤ 5°
- 136 + 0.55 (θ - 5) dB(W/(m<sup>2</sup> · MHz)) for 5° < θ ≤ 25°
- 125 dB(W/(m<sup>2</sup> · MHz)) for 25° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. Outside this area Table **21-4** of Article **21** shall apply. Furthermore, the coordination thresholds in Table 5-2 of Annex 1 to Appendix **5** of the Radio Regulations (Edition of 2004), in conjunction with the applicable provisions of Articles **9** and **11** associated with No. **9.11A**, shall apply to systems for which complete notification information has been received by the Radiocommunication Bureau by 14 November 2007 and that have been brought into use by that date. (WRC-07)

**5.415** The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**, giving particular attention to the broadcasting-satellite service in Region 1. (WRC-07)

**5.415A** *Additional allocation:* in India and Japan, subject to agreement obtained under No. **9.21**, the band 2 515-2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries. (WRC-2000)

2520 - 2535 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 5.403 5.414A 5.415A	2520 - 2535 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 5.403 5.414A 5.415A		
2535 - 2655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 5.339 5.417A 5.417B 5.417C 5.417D 5.418 5.418A 5.418B 5.418C	2535 - 2655 MHz FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 5.339 5.417A 5.417B 5.417C 5.417D 5.418 5.418A 5.418B 5.418C		
2655 - 2670 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.420	2655 - 2670 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING SATELLITE 5.413 5.416 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149 5.420		
2670 - 2690 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE SATELLITE (Earth-to-space) 5.351A 5.419	2670 - 2690 MHz FIXED 5.410 FIXED SATELLITE (space-to-earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE SATELLITE (Earth-to-space) 5.351A 5.419		

Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149	Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 5.149		
2690 - 2700 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	2690 - 2700 MHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422		5.340: All emissions are prohibited except those provided by No. 5.422

**5.416** The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. The provisions of No. **9.19** shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)

**5.417** (SUP - WRC-2000)

**5.417A** SUP (WRC-15)

**5.417B** SUP (WRC-15)

**5.417C** SUP (WRC-15)

**5.417D** SUP (WRC-15)

**5.418** *Additional allocation:* in India, the frequency band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-15)**. The provisions of No. **5.416** and Table **21-4** of Article **21**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcastingsatellite service (sound) is subject to Resolution **539 (Rev.WRC-15)**. Geostationary broadcastingsatellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power fluxdensity at the Earth's surface produced by emissions from a geostationary broadcasting satellite service (sound) space station operating in the frequency band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

- 130 dB(W/(m<sup>2</sup> · MHz)) for 0° ≤ θ ≤ 5°
- 130 + 0.4 (θ - 5) dB(W/(m<sup>2</sup> · MHz)) for 5° < θ ≤ 25°
- 122 dB(W/(m<sup>2</sup> · MHz)) for 25° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of -122 dB(W/(m<sup>2</sup> · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. (WRC-15)

**5.A117** Use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **COM4/1 (WRC-15)**. (WRC-15)

- 5.B117** Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4 200-4 400 MHz on a secondary basis. (WRC-15)
- 5.R1a** *Additional allocation:* in Angola, Benin, Botswana, Burkina Faso, Burundi, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)
- 5.R1b** In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)
- 5.B11** *Different category of service:* in Argentina, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Argentina, Brazil, Guatemala and Mexico, the frequency band 3 300-3 400 MHz is also allocated to the fixed service on a primary basis. Stations in the fixed and mobile services operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)
- 5.C11** In the following countries in Region 2: Argentina, Colombia, Costa Rica, Ecuador, Mexico and Uruguay, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. This use in Argentina and Uruguay is subject to the application of No. **9.21**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)
- 5.R3d** *Additional allocation:* in Papua New Guinea, the frequency band 3 300-3 400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service. (WRC-15)
- 5.R3e** In the following countries in Region 3: Cambodia, India, Lao P.D.R., Pakistan, Philippines and Viet Nam, the use of the frequency band 3 300-3 400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. The use of the frequency band 3 300-3 400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. **9.21** with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)
- 5.IMT** In Region 2, the frequency band 3 400-3 600 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \text{ 4 kHz))}$  for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of

any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

**5.IMT2** In Canada, Colombia, Costa Rica and the United States, the frequency band 3 600-3 700 MHz, or portions thereof, is identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. **9.21** with other administrations and ensure that the power flux density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W)/(m}^2 \cdot 4 \text{ kHz)}$ ) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service, including IMT systems, in the frequency band 3 600-3 700 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

**5.418A** In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. (WRC-03)

**5.418B** Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418**, for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12**. (WRC-03)

**5.418C** Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418** and No. **22.2** does not apply. (WRC-03)

**5.419** When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. **9.11A**. (WRC-07)

**5.420** The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**. The coordination under No. **9.11A** applies. (WRC-07)

**5.420A** (SUP - WRC-07)

**5.421** (SUP - WRC-03)

**5.422** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

2700 - 2900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.427	2700 - 2900 MHz AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.427		
2900 - 3100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427	2900 - 3100 MHz RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427		
3100 - 3300 MHz RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) 5.149 5.428	3100 - 3300 MHz RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) 5.149 5.428		
3300 - 3400 MHz RADIOLOCATION Amateur 5.149 5.429	3300 - 3400 MHz RADIOLOCATION Amateur 5.149 5.429		
3400 - 3500 MHz FIXED FIXED SATELLITE(space-to-Earth) Amateur Mobile 5.432B Radiolocation 5.433 5.282 5.432 5.432A	3400 - 3500 MHz FIXED FIXED SATELLITE(space-to-Earth) Amateur Mobile 5.432B Radiolocation 5.433 5.282 5.432 5.432A	3400-3600 MHz BWA	
3500 - 3600 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3500 - 3600 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3580 – 4200 MHz Point-to-Point Radio Comm. System	ITU-R Rec 635
3600-3700MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile Radiolocation	3600-3700MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile Radiolocation		

5.435	5.435		
3700 - 4200 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile	3700 - 4200 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile		
4200 - 4400 MHz AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440	4200 - 4400 MHz AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440		
4400 - 4500 MHz FIXED MOBILE 5.440A	4400 - 4500 MHz FIXED MOBILE 5.440A	4400 - 5000 MHz Point-to-Point Radio Comm. System	ITU-R Rep 287
4500 - 4800 MHz FIXED FIXED-SATELLITE (space-to-earth) 5.441 MOBILE 5.440A	4500 - 4800 MHz FIXED FIXED-SATELLITE (space-to-earth) 5.441 MOBILE 5.440A		
4800 - 4990 MHz FIXED MOBILE 5.440A 5.442 Radio Astronomy 5.149 5.339 5.443	4800 - 4990 MHz FIXED MOBILE 5.440A 5.442 Radio Astronomy 5.149 5.339 5.443		
4990 - 5000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space Research (passive) 5.149	4990 - 5000 MHz FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space Research (passive) 5.149		

**5.423** In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.

**5.424** *Additional allocation:* in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.

**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)

**5.425** In the band 2 900-3 100 MHz, the use of the shipborne interrogator-transponder (SIT) system shall be confined to the sub-band 2 930 -2 950 MHz.

**5.426** The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.

**5.427** In the bands 2 900-3 100 MHz and 9 300-9 500 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, Kyrgyzstan and Turkmenistan, the frequency band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-15)
- 5.429** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-15)
- 5.430** *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the frequency band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-15)
- 5.430A** The allocation of the frequency band 3 400-3 600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. **9.21**. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. **9.17** and **9.18** shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)
- 5.431** *Additional allocation:* in Germany and Israel, the frequency band 3 400-3 475 MHz is also allocated to the amateur service on a secondary basis. (WRC-15)
- 5.431A** In Region 2, the allocation of the frequency band 3 400-3 500 MHz to the mobile, except aeronautical mobile, service on a primary basis is subject to agreement obtained under No. **9.21**. (WRC-15)
- 5.432** *Different category of service:* in Korea (Rep. of), Japan and Pakistan, the allocation of the band 3 400-3 500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-2000)
- 5.432A** In Korea (Rep. of), Japan and Pakistan, the band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$  for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-07)
- 5.432B** *Different category of service:* in Australia, Bangladesh, China, French overseas communities of Region 3, India, Iran (Islamic Republic of), New Zealand, Philippines and Singapore, the frequency band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and

does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \text{ 4 kHz))}$  for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)

- 5.433** In Regions 2 and 3, in the band 3 400-3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.
- 5.433A** In Australia, Bangladesh, China, French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, New Zealand, Pakistan and Philippines, the frequency band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dB(W/(m}^2 \text{ 4 kHz))}$  for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15)
- 5.434** (SUP - WRC-97)
- 5.435** In Japan, in the band 3 620-3 700 MHz, the radiolocation service is excluded.
- 5.436** Not used.
- 5.437** (SUP - WRC-2000)
- 5.438** Use of the frequency band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. (WRC-15)
- 5.A11** In Uruguay, the frequency band 4 800-4 900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service. Such use shall be in accordance with Resolution **223 (Rev.WRC-15)**. (WRC-15)
- 5.R3f** In Cambodia, Lao P.D.R. and Viet Nam, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the

Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. **9.21** with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density produced by this station does not exceed  $-155 \text{ dB(W/(m}^2 \cdot 1 \text{ MHz))}$  produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This criterion is subject to review at WRC-19. See Resolution **223 (Rev.WRC-15)**. This identification shall be effective after WRC-19. (WRC-15)

**5.439** *Additional allocation:* in Iran (Islamic Republic of), the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis. (WRC-12)

**5.440** The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of 2 MHz of these frequencies, subject to agreement obtained under No. **9.21**.

**5.440A** In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 400-4 940 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this band by other mobile service applications or by other services to which this band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-07)

**5.441** The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **30B**. The use of the bands 10.7-10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

**5.442** In the frequency bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), and in Australia, the frequency band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to the fixed service. (WRC-15)

**5.443** *Different category of service:* in Argentina, Australia and Canada, the allocation of the bands 4 825-4 835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. **5.33**).

**5.443A** (SUP - WRC-03)

5000 - 5010 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	5000 - 5010 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)		
5010 - 5030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA	5010 - 5030 MHz AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA		

AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5..443B	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5..443B			
5030 - 5091 MHz AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	5030 - 5091 MHz AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444			
5091 - 5150 MHz AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444 5.444A	5091 - 5150 MHz AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444 5.444A			
5150-5250 MHz FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447 5.447B 5.447C	5150-5250 MHz FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447 5.447B 5.447C	5150-5350MHz BWA	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Memorandum Circular No. 09-09-2003 Wireless Data Networks and Devices	
5250-5255 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A	5250-5255 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D FIXED 5.447E 5.448 5.448A			
5255-5350 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447E 5.448 5.448A	5255-5350 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) FIXED 5.447E 5.448 5.448A			
5350-5460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C	5350-5460 MHz EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C			
5460-5470 MHz EARTH EXPLORATION-SATELLITE ( active)	5460-5470 MHz EARTH EXPLORATION-SATELLITE ( active)			

RADIOLOCATION 5.448D RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448B	RADIOLOCATION 5.448D RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448B		
5470-5570 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B MARITIME RADIONAVIGATION SPACE RESEARCH (active) 5.448B 5.450 5.451	5470-5570 MHz EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B MARITIME RADIONAVIGATION SPACE RESEARCH (active) 5.448B 5.450 5.451	5470-5850MHz BWA	Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs) Memorandum Circular No. 09-09-2003 Wireless Data Networks and Devices
5570-5650 MHz MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B MARITIME RADIONAVIGATION 5.450 5.451 5.452	5570-5650 MHz MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B MARITIME RADIONAVIGATION 5.450 5.451 5.452		
5650 - 5725 MHz MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION Amateur Space Research (deep space) 5.282 5.451 5.453 5.454 5.455	5650 - 5725 MHz MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION Amateur Space Research (deep space) 5.282 5.451 5.453 5.454 5.455		
5725 - 5830 MHz RADIOLOCATION Amateur 5.150 5.453 5.455	5725 - 5830 MHz RADIOLOCATION Amateur 5.150 5.453 5.455		
5830 - 5850 MHz RADIOLOCATION Amateur Amateur-satellite (space-to-earth) 5.150 5.453 5.455	5830 - 5850 MHz RADIOLOCATION Amateur Amateur-satellite (space-to-earth) 5.150 5.453 5.455		

**5.443AA** In the frequency bands 5 000-5 030 MHz and 5 091-5 150 MHz, the aeronautical mobile-satellite (R) service is subject to agreement obtained under No. **9.21**. The use of these bands by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)

**5.443B** In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed -124.5 dB(W/m<sup>2</sup>) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the frequency band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the frequency band 5 010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution **741 (Rev.WRC-15)**. (WRC-15)

- 5.443C** The use of the frequency band 5 030-5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030-5 091 MHz shall be limited to protect RNSS system downlinks in the adjacent 5 010-5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of  $-75$  dBW/MHz in the frequency band 5 010-5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)
- 5.443D** In the frequency band 5 030-5 091 MHz, the aeronautical mobile-satellite (R) service is subject to coordination under No. **9.11A**. The use of this frequency band by the aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems. (WRC-12)
- 5.444** The frequency band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the frequency band 5 030-5 091 MHz, the requirements of this system shall have priority over other uses of this frequency band. For the use of the frequency band 5 091-5 150 MHz, No. **5.444A** and Resolution **114 (Rev.WRC-15)** apply. (WRC-15)
- 5.444A** The use of the allocation to the fixed-satellite service (Earth-to-space) in the frequency band 5 091-5 150 MHz is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the frequency band 5 091-5 150 MHz by feeder links of non-geostationary satellite systems in the mobile-satellite service shall be subject to application of Resolution **114 (Rev.WRC-15)**. Moreover, to ensure that the aeronautical radionavigation service is protected from harmful interference, coordination is required for feeder-link earth stations of the non-geostationary satellite systems in the mobile-satellite service which are separated by less than 450 km from the territory of an administration operating ground stations in the aeronautical radionavigation service. (WRC-15)
- 5.444B** The use of the frequency band 5 091-5 150 MHz by the aeronautical mobile service is limited to:
- systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution **748 (Rev.WRC-15)**;
  - aeronautical telemetry transmissions from aircraft stations (see No. **1.83**) in accordance with Resolution **418 (Rev.WRC-15)**. (WRC-15)
- 5.445** Not used.
- 5.446** *Additional allocation:* in the countries listed in No. **5.369**, the frequency band 5 150- 5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2 (except in Mexico), the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in No. **5.369** and Bangladesh, the frequency band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed  $-159$  dB(W/m<sup>2</sup>) in any 4 kHz band for all angles of arrival. (WRC-15)
- 5.446A** The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229(Rev.WRC-12)**. (WRC-12)
- 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. (WRC-03)
- 5.446C** *Additional allocation:* in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia) and in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft

stations (see No. **1.83**), in accordance with Resolution **418 (Rev.WRC-12)**. These stations shall not claim protection from other stations operating in accordance with Article 5. No. **5.43A** does not apply. (WRC-12)

- 5.447** *Additional allocation:* in Côte d'Ivoire, Egypt, Israel, Lebanon, the Syrian Arab Republic and Tunisia, the band 5 150-5 250 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(Rev.WRC-12)** do not apply. (WRC-12)
- 5.447A** The allocation to the fixed-satellite service (Earth-to-space) in the band 5 150-5 250 MHz is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.
- 5.447B** *Additional allocation:* the band 5 150-5 216 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 5 150-5 216 MHz shall in no case exceed  $-164$  dB(W/m<sup>2</sup>) in any 4 kHz band for all angles of arrival.
- 5.447C** Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 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**.
- 5.447D** The allocation of the band 5 250-5255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. (WRC-97)
- 5.447E** *Additional allocation:* The frequency band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this frequency band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613-0. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. **5.43A** do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC-15)
- 5.447F** In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638-0 and ITU-R RS.1632-0. (WRC-15)
- 5.448** *Additional allocation:* in Azerbaijan, Kyrgyzstan, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-12)
- 5.448A** The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250-5 350 MHz shall not claim protection from the radiolocation service. No. **5.43A** does not apply. (WRC-03)
- 5.448B** The Earth exploration-satellite service (active) operating in the band 5 350-5 570 MHz and space research service (active) operating in the band 5 460-5 570 MHz shall not cause harmful interference to 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)

- 5.448C** 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. (WRC-03)
- 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)
- 5.449** The use of the band 5 350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.
- 5.450** *Additional allocation:* in Austria, Azerbaijan, Iran (Islamic Republic of), Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5 470-5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-12)
- 5.450A** In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638-0. (WRC-15)
- 5.450B** In the frequency band 5 470-5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600-5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)
- 5.451** *Additional allocation:* in the United Kingdom, the band 5 470-5 850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. **21.2, 21.3, 21.4** and **21.5** shall apply in the band 5 725-5 850 MHz.
- 5.452** Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.
- 5.453** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Swaziland, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the band 5 650-5 850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229(Rev.WRC-12)** do not apply. (WRC-12)
- 5.454** *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)
- 5.455** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

**5.456 SUP**

5850 - 5925 MHz FIXED FIXED-SATELLITE (earth-to-space)	5850 - 5925 MHz FIXED FIXED-SATELLITE (earth-to-space)		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
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MOBILE Radiolocation 5.150	MOBILE Radiolocation 5.150		
5925 - 6700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	5925 - 6700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	5925 - 6425 MHz Point-to-Point Radio Comm. System 6425 - 7125 MHz Point-to-Point Radio Comm. System	ITU-R Rec 383
6700 - 7075 MHz FIXED FIXED SATELLITE (earth-to-space)(space-to-earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	6700 - 7075 MHz FIXED FIXED SATELLITE (earth-to-space)(space-to-earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C		ITU-R Rec 384
7 075-7 145 FIXED MOBILE 5.458 5.459	7 075-7 145 FIXED MOBILE 5.458 5.459	7125 - 7725 MHz Point-to-Point Radio Comm. System	ITU-R Rec 385
7 145-7 235 FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	7 145-7 235 FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459		
7235 - 7250 MHz FIXED MOBILE 5.458	7235 - 7250 MHz FIXED MOBILE 5.458		
7250 - 7300 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE 5.461	7250 - 7300 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE 5.461		
7300 - 7450 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.461	7300 - 7450 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile 5.461		
7450 - 7550 MHz FIXED FIXED-SATELLITE (space-to-earth) METEOROLOGICAL-SATELLITE (space-to-earth)	7450 - 7550 MHz FIXED FIXED-SATELLITE (space-to-earth) METEOROLOGICAL-SATELLITE (space-to-earth)		

MOBILE except aeronautical mobile 5.461A	MOBILE except aeronautical mobile 5.461A		
7550 - 7750 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile	7550 - 7750 MHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile		
7750 - 7900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-earth) 5.461B MOBILE except aeronautical mobile	7750 - 7900 MHz FIXED METEOROLOGICAL-SATELLITE (space-to-earth) 5.461B MOBILE except aeronautical mobile	7725 - 8275 MHz Point-to-Point Radio Comm. System	ITU-R Rec 386
7900 - 8025 MHz FIXED FIXED-SATELLITE (earth-to-space) MOBILE 5.461	7900 - 8025 MHz FIXED FIXED-SATELLITE (earth-to-space) MOBILE 5.461		

**5.457** In Australia, Burkina Faso, Cote d'Ivoire, Mali and Nigeria, the allocation to the fixed service in the bands 6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to-HAPS direction) may also be used by gateway links for high-altitude platform stations (HAPS) within the territory of these countries. Such use is limited to operation in HAPS gateway links and shall not cause harmful interference to, and shall not claim protection from, existing services, and shall be in compliance with Resolution **150 (WRC-12)**. Existing services shall not be constrained in future development by HAPS gateway links. The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located within 1 000 kilometres from the border of an administration intending to use the HAPS gateway links. (WRC-12)

**5.457A** In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (Rev.WRC-03)**. In the frequency band 5 925-6 425 MHz, earth stations located on board vessels and communicating with space stations of the fixed-satellite service may employ transmit antennas with minimum diameter of 1.2 m and operate without prior agreement of any administration if located at least 330 km away from the low-water mark as officially recognized by the coastal State. All other provisions of Resolution **902 (WRC-03)** shall apply. (WRC-15)

**5.457B** In the frequency bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution **902 (WRC-03)** in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Jordan, Kuwait, Libya, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution **902 (WRC-03)**. (WRC-15)

**5.457C** In Region 2 (except Brazil, Cuba, French overseas departments and communities, Guatemala, Mexico, Paraguay, Uruguay and Venezuela), the frequency band 5 925-6 700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution **416 (WRC-07)** and shall not cause harmful interference to, or claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of this frequency band by other mobile service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-15)

**5.458** In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 075 MHz and 7 075-7 250 MHz.

- 5.458A** In making assignments in the band 6 700-7 075 MHz to space stations of the fixed-satellite service, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service in the band 6 650-6 675.2 MHz from harmful interference from unwanted emissions.
- 5.458B** The space-to-Earth allocation to the fixed-satellite service in the band 6 700-7 075 MHz is limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the band 6 700-7 075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. **22.2**.
- 5.458C SUP**
- 5.459** *Additional allocation:* in the Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. In the frequency band 7 190-7 235 MHz, with respect to the Earth exploration-satellite service (Earth-to-space), No. **9.21** does not apply. (WRC-15)
- 5.A111** The use of the frequency band 7 190-7 250 MHz (Earth-to-space) by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of spacecraft. Space stations operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 250 MHz shall not claim protection from existing and future stations in the fixed and mobile services, and No. **5.43A** does not apply. No. **9.17** applies. Additionally, to ensure protection of the existing and future deployment of fixed and mobile services, the location of earth stations supporting spacecraft in the Earth exploration-satellite service in non-geostationary orbits or geostationary orbit shall maintain a separation distance of at least 10 km and 50 km, respectively, from the respective border(s) of neighbouring countries, unless a shorter distance is otherwise agreed between the corresponding administrations. (WRC-15)
- 5.B111** Space stations on the geostationary orbit operating in the Earth exploration-satellite service (Earth-to-space) in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the space research service, and No. **5.43A** does not apply. (WRC-15)
- 5.460** No emissions from space research service (Earth-to-space) systems intended for deep space shall be effected in the frequency band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply. (WRC-15)
- 5.A192** The use of the frequency band 7 375-7 750 MHz by the maritime mobile-satellite service is limited to geostationary-satellite networks. (WRC-15)
- 5.B192** In the frequency band 7 375-7 750 MHz, earth stations in the maritime mobile-satellite service shall not claim protection from, nor constrain the use and development of, stations in the fixed and mobile, except aeronautical mobile, services. No. **5.43A** does not apply. (WRC-15)
- 5.461** *Additional allocation:* the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.461A** The use of the band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary-satellite systems. Non-geostationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on a primary basis until the end of their lifetime. (WRC-97)
- 5.461B** The use of the band 7 750-7 900 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems. (WRC-12)
- 5.462** (SUP - WRC-97)

8025 - 8175 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8025 - 8175 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A		
8175 - 8215 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8175 - 8215 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A		
8215 - 8400 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8215 - 8400 MHz EARTH EXPLORATION-SATELLITE (space-to-earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	8275 - 8500 MHz Point-to-Point Radio Comm. System	ITU-R Rep 1055
8400 - 8500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-earth) 5.465 5.466	8400 - 8500 MHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-earth) 5.465 5.466		

**5.462A** In Regions 1 and 3 (except for Japan), in the band 8 025-8 400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following values for angles of arrival ( $\theta$ ), without the consent of the affected administration:

-135 dB(W/m<sup>2</sup>) in a 1 MHz band for  $0^\circ \leq \theta < 5^\circ$

-135 + 0.5 ( $\theta - 5$ ) dB(W/m<sup>2</sup>) in a 1 MHz band for  $5^\circ \leq \theta < 25^\circ$

-125 dB(W/m<sup>2</sup>) in a 1 MHz band for  $25^\circ \leq \theta \leq 90^\circ$

(WRC-12)

**5.463** Aircraft stations are not permitted to transmit in the band 8 025-8 400 MHz. (WRC-97)

**5.464** (SUP - WRC-97)

**5.465** In the space research service, the use of the band 8 400-8 450 MHz is limited to deep space.

**5.466** *Different category of service:* in Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. **5.32**). (WRC-12)

8500-8550 MHz RADIOLOCATION 5.468 5.469	8500-8550 MHz RADIOLOCATION 5.468 5.469		
8550-8650 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	8550-8650 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A		
8650-8750 MHz RADIOLOCATION 5.468 5.469	8650-8750 MHz RADIOLOCATION 5.468 5.469		
8750-8850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	8750-8850 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471		
8850 - 9000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	8850 - 9000 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473		
9000 - 9200 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 5.471 5.473A	9000 - 9200 MHz RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 5.471 5.473A		
9200 - 9300 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	9200 - 9300 MHz RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
9300 - 9500 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.427 5.474 5.475 5.475A 5.475B 5.476A	9300 - 9500 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.427 5.474 5.475 5.475A 5.475B 5.476A		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
9500 - 9800 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	9500 - 9800 MHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
9800-9900 MHz	9800-9900 MHz		Memorandum Circular No. 03-05-2007

RADIOLOCATION Earth Exploration Satellite (active) Fixed Space Research (active) 5.477 5.478 5.478A 5.478B	RADIOLOCATION Earth Exploration Satellite (active) Fixed Space Research (active) 5.477 5.478 5.478A 5.478B		Short Range Devices (SRDs)
9900-10000 MHz RADIOLOCATION Fixed 5.477 5.478 5.479	9900-10000 MHz RADIOLOCATION Fixed 5.477 5.478 5.479		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

**5.467** (SUP - WRC-03)

**5.468** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Chad, Togo, Tunisia and Yemen, the frequency band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

**5.469** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-12)

**5.469A** In the band 8 550-8 650 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service. (WRC-97)

**5.470** The use of the band 8 750-8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.

**5.471** *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar, Sudan and South Sudan, the bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-12)

**5.471** *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and Sudan, the frequency bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-15)

**5.472** In the bands 8 850-9 000 MHz and 9 200-9 225 MHz, the maritime radionavigation service is limited to shore-based radars.

**5.473** *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-07)

**5.473A** In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. **5.337** operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. **5.471**. (WRC-07)

- 5.A112** The use of the frequency bands 9 200-9 300 MHz and 9 900-10 400 MHz by the Earth exploration-satellite service (active) is limited to systems requiring necessary bandwidth greater than 600 MHz that cannot be fully accommodated within the frequency band 9 300-9 900 MHz. Such use is subject to agreement to be obtained under No. **9.21** from Algeria, Saudi Arabia, Bahrain, Egypt, Indonesia, Iran (Islamic Republic of), Lebanon and Tunisia. An administration that has not replied under No. **9.52** is considered as not having agreed to the coordination request. In this case, the notifying administration of the satellite system operating in the Earth exploration-satellite service (active) may request the assistance of the Bureau under Sub-Section IID of Article **9**. (WRC-15)
- 5.B112** Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime radionavigation and radiolocation services in the frequency band 9 200-9 300 MHz, the radionavigation and radiolocation services in the frequency band 9 900-10 000 MHz and the radiolocation service in the frequency band 10.0-10.4 GHz. (WRC-15)
- 5.C112** Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2066-0. (WRC-15)
- 5.D112** Stations operating in the Earth exploration-satellite (active) service shall comply with Recommendation ITU-R RS.2065-0. (WRC-15)
- 5.474** In the band 9 200-9 500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article **31**).
- 5.475** The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. (WRC-07)
- 5.475A** The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)
- 5.475B** In the band 9 300-9 500 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, radars operating in the radionavigation service in conformity with the Radio Regulations. Ground-based radars used for meteorological purposes have priority over other radiolocation uses. (WRC-07)
- 5.476** (SUP - WRC-07)
- 5.476A** In the band 9 300-9 800 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and radiolocation services. (WRC-07)
- 5.477** *Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. **5.33**). (WRC-15)
- 5.478** *Additional allocation:* in Azerbaijan, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)
- 5.478A** The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band. (WRC-07)

**5.478B** In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis. (WRC-07)

**5.479** The band 9 975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

10 - 10.45 GHz FIXED MOBILE RADIOLOCATION Amateur 5.479	10 - 10.45 GHz FIXED MOBILE RADIOLOCATION Amateur 5.479	10150-10650 MHz BWA	ITU-R Rep 607
10.45 - 10.5 GHz RADIOLOCATION Amateur Amateur-Satellite 5.481	10.45 - 10.5 GHz RADIOLOCATION Amateur Amateur-Satellite 5.481		
10.5 - 10.55 GHz FIXED MOBILE RADIOLOCATION	10.5 - 10.55 GHz FIXED MOBILE RADIOLOCATION	10.5 - 10.68 GHz Point-to-Point Radio Comm. System	
10.55 - 10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation	10.55 - 10.6 GHz FIXED MOBILE except aeronautical mobile Radiolocation		
10.6 - 10.68 GHz EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A	10.6 - 10.68 GHz EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A		
10.68 - 10.7 GHz EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	10.68 - 10.7 GHz EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483		
10.7 - 11.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A	10.7 - 11.7 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A	10.7 - 11.7 GHz Point-to-Point Radio Comm. System	

**5.A15** Resolution **COM4/5 (WRC-15)** shall apply. (WRC-15)

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

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

**5.A161** The use of the frequency band 13.4-13.65 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary-satellite systems and is subject to agreement obtained under No. **9.21** with respect to satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015. (WRC-15)

**5.X161** Administrations shall not preclude the deployment and operation of transmitting earth stations in the standard frequency and time signal-satellite service (Earth-to-space) allocated on a secondary basis in the frequency band 13.4-13.65 GHz due to the primary allocation to FSS (space-to-Earth). (WRC-15)

**5.B161** The allocation of the frequency band 13.4-13.65 GHz to the space research service on a primary basis is limited to:

- satellite systems operating in the space research service (space-to-space) to relay data from space stations in the geostationary-satellite orbit to associated space stations in non-geostationary satellite orbits for which advance publication information has been received by the Bureau by 27 November 2015,
- active spaceborne sensors,
- satellite systems operating in the space research service (space-to-Earth) to relay data from space stations in the geostationary-satellite orbit to associated earth stations. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)

**5.B161A** In the frequency band 13.4-13.65 GHz, satellite systems in the space research service (space-to-Earth) and/or the space research service (space-to-space) shall not cause harmful interference to, nor claim protection from, stations in the fixed, mobile, radiolocation and Earth exploration-satellite (active) services. (WRC-15)

**5.C161** In the frequency band 13.4-13.65 GHz, geostationary-satellite networks in the fixed-satellite service (space-to-Earth) shall not claim protection from space stations in the Earth exploration-satellite service (active) operating in accordance with these Regulations, and No. **5.43A** does not apply. The provisions of No. **22.2** do not apply to the Earth exploration-satellite service (active) with respect to the fixed-satellite service (space-to-Earth) in this frequency band. (WRC-15)

**5.482** In the band 10.6-10.68 GHz, the power delivered to the antenna of stations of the fixed and mobile, except aeronautical mobile, services shall not exceed –3 dBW. This limit may be exceeded, subject to agreement obtained under No. **9.21**. However, in Algeria, Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Egypt, United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Pakistan, Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, services is not applicable. (WRC-07)

**5.482A** For sharing of the band 10.6-10.68 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile, except aeronautical mobile, services, Resolution **751 (WRC-07)** applies. (WRC-07)

**5.483** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People’s Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-12)

**5.484** In Region 1, the use of the band 10.7-11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

**5.484A** The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

11.7 - 12.2 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	11.7 - 12.2 GHz FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A		
12.2 - 12.5 GHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile BROADCASTING 5.487	12.2 - 12.5 GHz FIXED FIXED-SATELLITE (space-to-earth) MOBILE except aeronautical mobile BROADCASTING 5.487		
12.5-12.75 MHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493	12.5-12.75 MHz FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493		BC-STL/CARS 12700-12800/13000-13100 MHz
12.75 - 13.25 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 MOBILE Space Research (deep space)(space-to-earth)	12.75 - 13.25 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.441 MOBILE Space Research (deep space)(space-to-earth)	12.75 - 13.25 GHz Point-to-Point Radio Comm. System	ITU-R Rec 497
13.25 - 13.4 GHz EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active)	13.25 - 13.4 GHz EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active)		

5.498A 5.499	5.498A 5.499		
13.4 - 13.75 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard Frequency and Time Signal-Satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	13.4 - 13.75 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard Frequency and Time Signal-Satellite (Earth-to-space) 5.499 5.500 5.501 5.501B		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
13.75 - 14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard Frequency & Time Signal-Satellite (earth-to-space) Space Research 5.499 5.500 5.501 5.502 5.503	13.75 - 14 GHz FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard Frequency & Time Signal-Satellite (earth-to-space) Space Research 5.499 5.500 5.501 5.502 5.503		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

**5.485** In Region 2, in the band 11.7-12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

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

**5.487** In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix **30**. (WRC-03)

**5.487A** *Additional allocation:* in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-03)

**5.488** The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. **9.14** for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-03)

**5.489** *Additional allocation:* in Peru, the band 12.1-12.2 GHz is also allocated to the fixed service on a primary basis.

- 5.490** In Region 2, in the band 12.2-12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix **30**.
- 5.491** (SUP - WRC-03)
- 5.492** Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix **30** may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. (WRC-2000)
- 5.493** The broadcasting-satellite service in the band 12.5-12.75 GHz in Region 3 is limited to a power flux-density not exceeding  $-111 \text{ dB(W/(m}^2 \text{ } 27 \text{ MHz))}$  for all conditions and for all methods of modulation at the edge of the service area. (WRC-97)
- 5.494** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Oman, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Somalia, Sudan, South Sudan, Chad, Togo and Yemen, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-15)
- 5.495** *Additional allocation:* in France, Greece, Monaco, Montenegro, Uganda, Romania and Tunisia, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-15)
- 5.496** *Additional allocation:* in Austria, Azerbaijan, Kyrgyzstan and Turkmenistan, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Table **21-4** of Article **21**, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (WRC-2000)
- 5.497** The use of the band 13.25-13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.
- 5.498** (SUP - WRC-97)
- 5.498A** The Earth exploration-satellite (active) and space research (active) services operating in the band 13.25-13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)
- 5.499** *Additional allocation:* in Bangladesh and India, the band 13.25-14 GHz is also allocated to the fixed service on a primary basis. In Pakistan, the band 13.25-13.75 GHz is allocated to the fixed service on a primary basis. (WRC-12)
- 5.500** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Morocco, Mauritania, Niger, Nigeria, Oman, Qatar, the Syrian Arab Republic, Singapore, Sudan, South Sudan, Chad and Tunisia, the frequency band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. In Pakistan, the frequency band 13.4-13.75 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-15)

**5.501** *Additional allocation:* in Azerbaijan, Hungary, Japan, Kyrgyzstan, Romania and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-12)

**5.501A** The allocation of the frequency band 13.65-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the frequency band by the space research service are on a secondary basis. (WRC-15)

**5.501B** In the band 13.4-13.75 GHz, the Earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service.(WRC-97)

**5.502** In the band 13.75-14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed-satellite service in this band with an antenna diameter smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed:

- –115 dB(W/(m<sup>2</sup> · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal State;
- –115 dB(W/(m<sup>2</sup> · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained.

For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. (WRC-03)

**5.503** In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

– in the band 13.77-13.78 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed:

- i) 4.7D – 28 dB(W/40 kHz), where *D* is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 1.2 m and less than 4.5 m;
- ii) 49.2 – 20 log(*D*/4.5) dB(W/40 kHz), where *D* is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m;
- iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m;
- iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater;

– the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. (WRC-03)

**5.503A** (SUP - WRC-03)

14 - 14.25 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B	14 - 14.25 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B	14.0-14.5GHz Aeronautical Mobile Satellite Service (Secondary Basis)	Memorandum Circular No. 04-05-2004 Aeronautical Mobile Satellite Service (Secondary Basis)
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<p>RADIONAVIGATION 5.504 Mobile-Satellite (earth-to-space) 5.504B 5.504C 5.506A Space Research 5.504A 5.505</p>	<p>RADIONAVIGATION 5.504 FIXED 5.505 Mobile-Satellite (earth-to-space) 5.504B 5.504C 5.506A Space Research 5.504A 5.505</p>		
<p>14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 Mobile-Satellite (earth-to-space) 5.504B 5.506A 5.508A Space Research 5.504A 5.505 5.508</p>	<p>14.25-14.3 GHz FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 FIXED 5.505 Mobile-Satellite (earth-to-space) 5.504B 5.506A 5.508A Space Research 5.504A 5.505 5.508</p>		
<p>14.3 - 14.4 GHz FIXED FIXED SATELLITE (Earth to space) 5.457A 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (earth-to-space) 5.504B 5.506A 5.509A Radionavigation-Satellite 5.504A</p>	<p>14.3 - 14.4 GHz FIXED FIXED SATELLITE (Earth to space) 5.457A 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-Satellite (earth-to-space) 5.504B 5.506A 5.509A Radionavigation-Satellite 5.504A</p>		
<p>14.4-14.47 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A</p>	<p>14.4-14.47 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A</p>		
<p>14.47 - 14.5 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio Astronomy 5.149 5.504A</p>	<p>14.47 - 14.5 GHz FIXED FIXED SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio Astronomy 5.149 5.504A</p>		
<p>14.5 - 14.8 GHz FIXED FIXED SATELLITE (earth-to-space) 5.510</p>	<p>14.5 - 14.8 GHz FIXED FIXED SATELLITE (earth-to-space) 5.510</p>	<p>14.5 - 15.35 GHz Point-to-Point Radio Comm. System</p>	<p>ITU-R Rec 636</p>

MOBILE Space Research	MOBILE Space Research		
14.8 -15.35 GHz FIXED MOBILE Space Research 5.339	14.8 -15.35 GHz FIXED MOBILE Space Research 5.339		
15.35 - 15.4 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	15.35 - 15.4 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511		5.340: All emissions are prohibited within this band except those provided for by No. 5.511

**5.504** The use of the band 14-14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service.

**5.504A** In the band 14-14.5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. (WRC-03)

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

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

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

**5.506** The band 14-14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.

**5.506A** In the band 14-14.5 GHz, ship earth stations with an e.i.r.p. greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (WRC-03)**. This footnote shall not apply to ship earth stations for which the complete Appendix 4 information has been received by the Bureau prior to 5 July 2003. (WRC-03)

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

**5.507** Not used.

**5.508** *Additional allocation:* in Germany, France, Italy, Libya, The Former Yugoslav Rep. of Macedonia and the United Kingdom, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-12)

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

**5.509** (SUP - WRC-07)

**5.509A** In the frequency band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Bahrain, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Morocco, Nigeria, Oman, the Syrian Arab Republic, the United Kingdom, Sri Lanka, Tunisia and Viet Nam by any aircraft earth station in the aeronautical mobile-satellite service shall not exceed the limits given in Annex 1, Part B of Recommendation ITU-R M.1643-0, unless otherwise specifically agreed by the affected administration(s). The provisions of this footnote in no way derogate the obligations of the aeronautical mobile-satellite service to operate as a secondary service in accordance with No. **5.29**. (WRC-15)

**5.A16** The use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **PLEN/1 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **PLEN/2 (WRC-15)** by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting satellite service is limited to geostationary-satellites. (WRC-15)

**5.B16** For the use of the frequency bands 14.5-14.75 GHz in countries listed in Resolution **PLEN/1 (WRC-15)** and 14.5-14.8 GHz in countries listed in Resolution **PLEN/2 (WRC-15)** by the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting satellite service, the fixed-satellite service earth stations shall have a minimum antenna diameter of 6 m and a maximum power spectral density of  $-44.5$  dBW/Hz at the input of the antenna. The earth stations shall be notified at known locations on land. (WRC-15)

**5.C16** The frequency band 14.5-14.8 GHz is also allocated to the space research service on a primary basis. However, such use is limited to the satellite systems operating in the space research service (Earth-to-space) to relay data to space stations in the geostationary-satellite orbit from associated earth stations. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services and in the fixed-satellite service limited to feeder links for the broadcasting-satellite service and associated space operations functions using the guardbands under Appendix **30A** and feeder links for the broadcasting-satellite service in Region 2. Other uses of this frequency band by the space research service are on a secondary basis. (WRC-15)

**5.D16** Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in the frequency bands 14.5-14.75 GHz (in countries listed in Resolution **PLEN/1 (WRC-15)**) and 14.5-14.8 GHz (in countries listed in Resolution **PLEN/2 (WRC-15)**), it shall ensure that the power flux-density produced by this earth station does not exceed  $-151.5$  dB(W/(m<sup>2</sup> · 4 kHz)) produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State. (WRC-15)

**5.E16** In the frequency bands 14.50-14.75 GHz in countries listed in Resolution **PLEN/1 (WRC-15)** and 14.50-14.8 GHz in countries listed in Resolution **PLEN/2 (WRC-15)**, the location of earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall maintain a separation distance of at least 500 km from the border(s) of other

countries unless shorter distances are explicitly agreed by those administrations. No. **9.17** does not apply. When applying this provision, administrations should consider the relevant parts of these Regulations and the latest relevant ITU-R Recommendations. (WRC-15)

- 5.F16** In the frequency bands 14.50-14.75 GHz in countries listed in Resolution **PLEN/1 (WRC-15)** and 14.50-14.8 GHz in countries listed in Resolution **PLEN/2 (WRC-15)**, earth stations in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service shall not constrain the future deployment of the fixed and mobile services. (WRC-15)
- 5.510** Except for use in accordance with Resolution **PLEN/1 (WRC-15)** and Resolution **PLEN/2 (WRC-15)**, the use of the frequency band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. Uses other than feeder links for the broadcasting-satellite service are not authorized in Regions 1 and 2 in the frequency band 14.75-14.8 GHz. (WRC-15)
- 5.511** *Additional allocation:* in Saudi Arabia, Bahrain, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Oman, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-12)

15.4-15.43 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D	15.4-15.43 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D		
15.43 - 15.63 GHz FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	15.43 - 15.63 GHz FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C		
15.63 - 15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D	15.63 - 15.7 GHz RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D		
15.7 - 16.6 GHz RADIOLOCATION 5.512 5.513	15.7 - 16.6 GHz RADIOLOCATION 5.512 5.513		
16.6 - 17.1 GHz RADIOLOCATION Space Research (deep sea) ( Earth to Space) 5.512 5.513	16.6 - 17.1 GHz RADIOLOCATION Space Research (deep sea) ( Earth to Space) 5.512 5.513		
17.1 - 17.2 GHz RADIOLOCATION 5.512 5.513	17.1 - 17.2 GHz RADIOLOCATION 5.512 5.513		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
17.2 - 17.3 GHz EARTH EXPLORATION SATELLITE (active) RADIOLOCATION	17.2 - 17.3 GHz EARTH EXPLORATION SATELLITE (active) RADIOLOCATION		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

SPACE RESEARCH (active) 5.512 5.513 5.513A	SPACE RESEARCH (active) 5.512 5.513 5.513A		
17.3 - 17.7 GHz FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	17.3 - 17.7 GHz FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514		
17.7 - 18.1 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A (Earth to Space ) 5.516 MOBILE	17.7 - 18.1 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A (Earth to Space ) 5.516 MOBILE	17.7 - 19.7 GHz Point-to-Point Radio Comm. System	ITU-R Rec 595
18.1-18.4 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521	18.1-18.4 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519		
18.4 - 18.6 GHz FIXED FIXED-SATELLITE (space-to-earth) 5.484A 5.516B MOBILE	18.4 - 18.6 GHz FIXED FIXED-SATELLITE (space-to-earth) 5.484A 5.516B MOBILE		
18.6 - 18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space Research (passive) 5.522A	18.6 - 18.8 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space Research (passive) 5.522A		
18.8 - 19.3 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE	18.8 - 19.3 GHz FIXED FIXED SATELLITE (space-to-Earth) 5.516B 5.523A MOBILE		18.800 - 19.300 GHz GMPCS (Space-to-Earth)
19.3 - 19.7 GHz FIXED FIXED-SATELLITE (space-to-earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	19.3 - 19.7 GHz FIXED FIXED-SATELLITE (space-to-earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE		

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

**5.511B** (SUP - WRC-97)

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

**5.511D SUP**

**5.511E** In the frequency band 15.4-15.7 GHz, stations operating in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the aeronautical radionavigation service. (WRC-12)

**5.511F** In order to protect the radio astronomy service in the frequency band 15.35-15.4 GHz, radiolocation stations operating in the frequency band 15.4-15.7 GHz shall not exceed the power flux-density level of  $-156$  dB(W/m<sup>2</sup>) in a 50 MHz bandwidth in the frequency band 15.35-15.4 GHz, at any radio astronomy observatory site for more than 2 per cent of the time. (WRC-12)

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

**5.513** *Additional allocation:* in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **5.512**.

**5.513A** Spaceborne active sensors operating in the band 17.2-17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis. (WRC-97)

**5.514** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Cameroon, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kuwait, Libya, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Sudan and South Sudan, the frequency band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-15)

**5.515** In the band 17.3-17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of § 1 of Annex 4 of Appendix **30A**. **5.516** The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

**5.516** The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the nongeostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. (WRC-2000)

**5.516A** In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Region 1 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix **30A**, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. (WRC-03)

**5.516B** The following bands are identified for use by high-density applications in the fixed-satellite service:

- 17.3-17.7 GHz (space-to-Earth) in Region 1,
- 18.3-19.3 GHz (space-to-Earth) in Region 2,
- 19.7-20.2 GHz (space-to-Earth) in all Regions,
- 39.5-40 GHz (space-to-Earth) in Region 1,
- 40-40.5 GHz (space-to-Earth) in all Regions,
- 40.5-42 GHz (space-to-Earth) in Region 2,
- 47.5-47.9 GHz (space-to-Earth) in Region 1,
- 48.2-48.54 GHz (space-to-Earth) in Region 1,
- 49.44-50.2 GHz (space-to-Earth) in Region 1,
- and
- 27.5-27.82 GHz (Earth-to-space) in Region 1,
- 28.35-28.45 GHz (Earth-to-space) in Region 2,
- 28.45-28.94 GHz (Earth-to-space) in all Regions,
- 28.94-29.1 GHz (Earth-to-space) in Region 2 and 3,
- 29.25-29.46 GHz (Earth-to-space) in Region 2,
- 29.46-30 GHz (Earth-to-space) in all Regions,
- 48.2-50.2 GHz (Earth-to-space) in Region 2.

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Radio Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **143 (WRC-03)**\*. (WRC-03))

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\* *Note by the Secretariat:* This Resolution was revised by WRC-07.

- 5.517** In Region 2, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations. (WRC-07)
- 5.518** (SUP - WRC-07)
- 5.519** *Additional allocation:* the bands 18-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)
- 5.520** The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service. (WRC-2000)
- 5.521** *Alternative allocation:* in the United Arab Emirates and Greece, the frequency band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-15)
- 5.522** (SUP - WRC-2000)
- 5.522A** The emissions of the fixed service and the fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in Nos. **21.5A** and **21.16.2**, respectively. (WRC-2000)
- 5.522B** The use of the band 18.6-18.8 GHz by the fixed-satellite service is limited to geostationary systems and systems with an orbit of apogee greater than 20 000 km. (WRC-2000)
- 5.522C** In the band 18.6-18.8 GHz, in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Jordan, Lebanon, Libya, Morocco, Oman, Qatar, the Syrian Arab Republic, Tunisia and Yemen, fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-2000 are not subject to the limits of No. **21.5A**. (WRC-2000)
- 5.523** (SUP - WRC-2000)
- 5.523A** The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A** and No. **22.2** does not apply. Administrations having geostationary-satellite networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **9.11A** with non-geostationary-satellite networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-geostationary-satellite networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix 4 notification information is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)
- 5.523B** The use of the band 19.3-19.6 GHz (Earth-to-space) by the fixed-satellite service is limited to feeder links for non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, and No. **22.2** does not apply.
- 5.523C** No. **22.2** shall continue to apply in the bands 19.3-19.6 GHz and 29.1-29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. (WRC-97)
- 5.523D** The use of the band 19.3-19.7 GHz (space-to-Earth) by geostationary fixed-satellite service systems and by feeder links for non-geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**. The use of this band for other non-geostationary fixed-satellite service systems, or for the cases indicated in Nos. **5.523C** and **5.523E**, is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles 9 (except No. **9.11A**) and 11 procedures, and to the provisions of No. **22.2**. (WRC-97)

**5.523E** No. **22.2** shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. (WRC-97)

19.7 - 20.1 GHz FIXED-SATELLITE (space-to-earth) 5.484A 5.516B Mobile-Satellite (space-to-earth) 5.524	19.7 - 20.1 GHz FIXED-SATELLITE (space-to-earth) 5.484A 5.516B FIXED MOBILE Mobile-Satellite (space-to-earth) 5.524		
20.1 - 20.2 GHz FIXED-SATELLITE (space-to-earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-earth) 5.524 5.525 5.526 5.527 5.528	20.1 - 20.2 GHz FIXED-SATELLITE (space-to-earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-earth) 5.524 5.525 5.526 5.527 5.528		
20.2 - 21.2 GHz FIXED-SATELLITE (space-to-earth) MOBILE-SATELLITE (space-to-earth) Standard Frequency & Time Signal-satellite (space-to-earth) 5.524	20.2 - 21.2 GHz FIXED-SATELLITE (space-to-earth) MOBILE-SATELLITE (space-to-earth) Standard Frequency & Time Signal-satellite (space-to-earth) 5.524		

**5.5X** The operation of earth stations in motion communicating with the FSS is subject to Resolution **COM5/2 (WRC-15)**. (WRC-15)

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

**5.525** In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz.

**5.526** In the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2, and in the bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point-to-point and point-to-multipoint communications.

**5.527** In the bands 19.7-20.2 GHz and 29.5-30 GHz, the provisions of No. **4.10** do not apply with respect to the mobile-satellite service.

- 5.528** The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1 GHz in Region 2 and in the band 20.1-20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. **5.524**.
- 5.529** The use of the bands 19.7-20.1 GHz and 29.5-29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. **5.526**.

21.2 - 21.4 GHz EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	21.2 - 21.4 GHz EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	21.2 - 23.6 GHz Point-to-Point Radio Comm. System	ITU-R Rec 637
21.4 - 22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530C 5.530D 5.531	21.4 - 22 GHz FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530C 5.530D 5.531		
22 - 22.21 GHz FIXED MOBILE except aeronautical mobile 5.149	22 - 22.21 GHz FIXED MOBILE except aeronautical mobile 5.149		
22.21 - 22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	22.21 - 22.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532		
22.5 - 22.55 GHz FIXED MOBILE	22.5 - 22.55 GHz FIXED MOBILE		
22.55 - 23.15 GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (earth-to-space) 5.532A 5.149	22.55 - 23.15 GHz FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (earth-to-space) 5.532A 5.149		
23.15 - 23.55 GHz FIXED INTER-SATELLITE 5.338A MOBILE	23.15 - 23.55 GHz FIXED INTER-SATELLITE 5.338A MOBILE		
23.55 - 23.6 GHz FIXED MOBILE	23.55 - 23.6 GHz FIXED MOBILE		
23.6 - 24 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY	23.6 - 24 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY		5.340: All emissions are prohibited within this band

SPACE RESEARCH (passive) 5.340	SPACE RESEARCH (passive) 5.340		
24 - 24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150	24 - 24.05 GHz AMATEUR AMATEUR-SATELLITE 5.150		
24.05 - 24.25 GHz RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150	24.05 - 24.25 GHz RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
24.25 - 24.45 GHz RADIONAVIGATION FIXED MOBILE	24.25 - 24.45 GHz RADIONAVIGATION FIXED MOBILE		
24.45 - 24.65 GHz FIXED INTER-SATELLITE MOBILE RADIONAVIGATION 5.533	24.45 - 24.65 GHz FIXED INTER-SATELLITE MOBILE RADIONAVIGATION 5.533		
24.65 - 24.75 GHz FIXED FIXED-SATELLITE (earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.533	24.65 - 24.75 GHz FIXED FIXED-SATELLITE (earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.533		

**5.530** (SUP - WRC-12)

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

**5.530B** In the band 21.4-22 GHz, in order to facilitate the development of the broadcasting-satellite service, administrations in Regions 1 and 3 are encouraged not to deploy stations in the mobile service and are encouraged to limit the deployment of stations in the fixed service to point-to-point links. (WRC-12)

**5.530C** SUP

**5.530D** See Resolution 555(WRC-12). (WRC-12)

**5.531** *Additional allocation:* in Japan, the band 21.4-22 GHz is also allocated to the broadcasting service on a primary basis.

**5.532** The use of the band 22.21-22.5 GHz by the Earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.

**5.532A** The location of earth stations in the space research service shall maintain a separation distance of at least 54 km from the respective border(s) of neighbouring countries to protect the existing and future deployment of fixed and mobile services unless a shorter distance is otherwise agreed between the corresponding administrations. Nos. **9.17** and **9.18** do not apply. (WRC-12)

**5.532B** Use of the band 24.65-25.25 GHz in Region 1 and the band 24.65-24.75 GHz in Region 3 by the fixed-satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5 m. (WRC-12)

**5.533** The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.

**5.534** (SUP - WRC-03)

24.75 - 25.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE	24.75 - 25.25 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE		
25.25 - 25.50 GHz FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	25.25 - 25.50 GHz FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	25.35 - 28.35 GHz MultiDistribution System	MC 8-10-97 Allocation shall be shared by voice, data, image and other services.
25.5-27 GHz EARTH EXPLORATION-SAT (space-to-Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space to earth) 5.536C Standard Frequency and Time Signal Satellite (Earth to Space) 5.536A	25.5-27 GHz EARTH EXPLORATION-SAT (space-to-Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space to earth) 5.536C Standard Frequency and Time Signal Satellite (Earth to Space) 5.536A		
27-27.5 GHz FIXED FIXED-SATELLITE (earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE	27-27.5 GHz FIXED FIXED-SATELLITE (earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE		

27.5 - 28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540	27.5 - 28.5 GHz FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540		
28.5 - 29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	28.5 - 29.1 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540	28.600 - 29.100 GHz GMPCS (Earth-to-Space)	Memorandum Circular No. 11-08-98 GMPCS
29.1 - 29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (earth-to-space) 5.541 5.540	29.1 - 29.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (earth-to-space) 5.541 5.540		
29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (earth-to-space) 5.541 Mobile-satellite (earth-to-space) 5.540 5.542	29.5-29.9 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 Earth exploration-satellite (earth-to-space) 5.541 Mobile-satellite (earth-to-space) Fixed Mobile 5.540 5.542		
29.9 - 30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	29.9 - 30 GHz FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 5.541 5.543 Fixed Mobile 5.525 5.526 5.527 5.538 5.540 5.542		
30 - 31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.542	30 - 31 GHz FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) Fixed Mobile		

- 5.535** In the band 24.75-25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.
- 5.535A** The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**, except as indicated in Nos. **5.523C** and **5.523E** where such use is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2**. (WRC-97)
- 5.536** Use of the 25.25-27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.
- 5.536A** Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. (WRC-12)
- 5.536B** In Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-15)
- 5.536C** In Algeria, Saudi Arabia, Bahrain, Botswana, Brazil, Cameroon, Comoros, Cuba, Djibouti, Egypt, United Arab Emirates, Estonia, Finland, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lithuania, Malaysia, Morocco, Nigeria, Oman, Qatar, Syrian Arab Republic, Somalia, Sudan, South Sudan, Tanzania, Tunisia, Uruguay, Zambia and Zimbabwe, earth stations operating in the space research service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-12)
- 5.537** Space services using non-geostationary satellites operating in the inter-satellite service in the band 27-27.5 GHz are exempt from the provisions of No. **22.2**.
- 5.537A** In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-12)**. (WRC-12)
- 5.538** *Additional allocation:* the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of 10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. (WRC-07)
- 5.539** The band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

**5.540** *Additional allocation:* the band 27.501-29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.

**5.541** In the band 28.5-30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.

**5.541A** Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix 4 coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix 4 information for coordination before this date are encouraged to utilize these techniques to the extent practicable. (WRC-2000)

**5.542** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Oman, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, South Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. 21.3 and 21.5 shall apply. (WRC-12)

31 - 31.3 GHz FIXED 5.338A 5.543A MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.545 5.149	31 - 31.3 GHz FIXED 5.338A 5.543A MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research 5.544 5.545 5.149		
31.3 - 31.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	31.3 - 31.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band
31.5 - 31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149	31.5 - 31.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149		
31.8 - 32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547B 5.548	31.8 - 32 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547B 5.548		

32 - 32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547C 5.548	32 - 32.3 GHz FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space)(space-to-Earth) 5.547 5.547C 5.548		
32.3 - 33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	32.3 - 33 GHz FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548		
33 - 33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E	33 - 33.4 GHz FIXED 5.547A RADIONAVIGATION 5.547 5.547E		
33.4 - 34.2 GHz RADIOLOCATION 5.549	33.4 - 34.2 GHz RADIOLOCATION 5.549		

**5.543** The band 29.95-30 GHz may be used for space-to-space links in the Earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.

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

**5.544** In the band 31-31.3 GHz the power flux-density limits specified in Article **21**, Table **21-4** shall apply to the space research service.

**5.545** *Different category of service:* in Armenia, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

**5.546** *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-12)

**5.547** The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution **75(WRC-2000)\***). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

**5.547A** Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems. (WRC-2000)

**5.547B** *Alternative allocation:* in the United States, the band 31.8-32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

**5.547C** *Alternative allocation:* in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-03)

**5.547D** *Alternative allocation:* in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. (WRC-97)

**5.547E** *Alternative allocation:* in the United States, the band 33-33.4 GHz is allocated to the radionavigation service on a primary basis. (WRC-97)

**5.548** In designing systems for the inter-satellite service in the band 32.3-33 GHz, for the radionavigation service in the band 32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**). (WRC-03)

**5.549** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, Sudan, South Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-12)

34.2 - 34.7 GHz RADIOLOCATION SPACE RESEARCH (deep space) (Earth to Space) 5.549	34.2 - 34.7 GHz RADIOLOCATION SPACE RESEARCH (deep space) (Earth to Space) 5.549		
34.7 - 35.2 GHz RADIOLOCATION Space Research 5.550 5.549	34.7 - 35.2 GHz RADIOLOCATION Space Research 5.550 5.549		
35.2 - 35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549	35.2 - 35.5 GHz METEOROLOGICAL AIDS RADIOLOCATION 5.549		

\* *Note by the Secretariat:* This Resolution was revised by WRC-12.

35.5 - 36 GHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A	35.5 - 36 GHz METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.549A		
36 - 37 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A	36 - 37 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 5.550A		
37 - 37.5 GHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.547	37 - 37.5 GHz FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.547	37.0 - 39.5 GHz Point-to-Point Radio System 38.5 - 42.5 GHz MultiDistribution System	ITU-R Rec 749  MC 8-10-97 Allocation shall be shared by voice, data, image and other services.
37.5 - 38 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth Exploration Satellite (space-to-Earth) 5.547	37.5 - 38 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth Exploration Satellite (space-to-Earth) 5.547		
38 - 39.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth) 5.547	38 - 39.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth) 5.547		
39.5 - 40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite (space-to-Earth) 5.547	39.5 - 40 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite (space-to-Earth) 5.547		

**5.549A** In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed  $-73.3 \text{ dB(W/m}^2\text{)}$  in this band. (WRC-03)

**5.550** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-12)

**5.550A** For sharing of the band 36-37 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile services, Resolution **752 (WRC-07)** shall apply. (WRC-07)

**5.551** (SUP - WRC-97)

**5.551A** (SUP - WRC-03)

**5.551AA**(SUP - WRC-03)

40 - 40.5 GHz EARTH EXPLORATION -SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth Exploration-Satellite (space-to-Earth)	40 - 40.5 GHz EARTH EXPLORATION -SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth Exploration-Satellite (space-to-Earth)		
40.5 - 41 GHz FIXED FIXED-SATELLITE (space-to-earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	40.5 - 41 GHz FIXED FIXED-SATELLITE (space-to-earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547		
41 - 42.5 GHz FIXED FIXED-SATELLITE (space-to-earth) 5.516B BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551F 5.551H 5.551I	41 - 42.5 GHz FIXED FIXED-SATELLITE (space-to-earth) 5.516B BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551F 5.551H 5.551I		
42.5 - 43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547	42.5 - 43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547		

43.5 - 47 GHz MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	43.5 - 47 GHz MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554		
47 - 47.2 GHz AMATEUR AMATEUR-SATELLITE	47 - 47.2 GHz AMATEUR AMATEUR-SATELLITE		
47.2-47.5 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE 5.552A	47.2-47.5 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE 5.552A		

**5.551B** (SUP - WRC-2000)

**5.551C** (SUP - WRC-2000)

**5.551D** (SUP - WRC-2000)

**5.551E** (SUP - WRC-2000)

**5.551F** *Different category of service:* in Japan, the allocation of the band 41.5-42.5 GHz to the mobile service is on a primary basis (see No. **5.33**). (WRC-97)

**5.551G** (SUP - WRC-03)

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

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

–209 dB(W/m<sup>2</sup>) in any 500 kHz of the frequency band 42.5-43.5 GHz at the site of any radio astronomy station registered as a very long baseline interferometry station.

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

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

– was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or

– was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

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

- 5.551I** The power flux-density in the band 42.5-43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting-satellite service operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station:
- 137 dB(W/m<sup>2</sup>) in 1 GHz and –153 dB(W/m<sup>2</sup>) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and
  - 116 dB(W/m<sup>2</sup>) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.
- These values shall apply at the site of any radio astronomy station that either:
- was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or
  - was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.
- Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743(WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-03)
- 5.552** The allocation of the spectrum for the fixed-satellite service in the bands 42.5-43.5 GHz and 47.2-50.2 GHz for Earth-to-space transmission is greater than that in the band 37.5-39.5 GHz for space-to-Earth transmission in order to accommodate feeder links to broadcasting satellites. Administrations are urged to take all practicable steps to reserve the band 47.2-49.2 GHz for feeder links for the broadcasting-satellite service operating in the band 40.5-42.5 GHz.
- 5.552A** The allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution **122 (Rev.WRC-07)**. (WRC-07)
- 5.553** 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. **5.43**). (WRC-2000)
- 5.554** 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. (WRC-2000)

47.5-47.9 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE	47.5-47.9 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE		
47.9-48.2 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE 5.552A	47.9-48.2 GHz FIXED FIXED SATELLITE (earth-to-space) 5.552 MOBILE 5.552A		
48.2 - 50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.338A 5.552 MOBILE 5.149 5.340 5.555	48.2 - 50.2 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.338A 5.552 MOBILE 5.149 5.340 5.555		5.340: All emissions from airborne station are prohibited within the band 48.94-49.04 GHz.
50.2 - 50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	50.2 - 50.4 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)		5.340: All emissions are prohibited within this band.

5.340	5.340		
50.4 - 51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-Satellite ( Earth-to-space)	50.4 - 51.4 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE Mobile-Satellite ( Earth-to-space)		

**5.554A** The use of the bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the fixed-satellite service (space-to-Earth) is limited to geostationary satellites. (WRC-03)

**5.555** *Additional allocation:* the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. (WRC-2000)

**5.555A** (SUP - WRC-03)

**5.555B** The power flux-density in the band 48.94-49.04 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth) operating in the bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed  $-151.8$  dB(W/m<sup>2</sup>) in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

51.4 - 52.6 GHz FIXED 5.338A MOBILE 5.547 5.556	51.4 - 52.6 GHz FIXED 5.338A MOBILE 5.547 5.556		
52.6 - 54.25 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	52.6 - 54.25 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556		5.340: All emissions are prohibited within this band.
54.25 - 55.78 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	54.25 - 55.78 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B		

**5.556** 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. (WRC-2000)

**5.556A** Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed  $-147$  dB(W/(m<sup>2</sup> 100 MHz)) for all angles of arrival. (WRC-97)

**5.556B** *Additional allocation:* in Japan, the band 54.25-55.78 GHz is also allocated to the mobile service on a primary basis for low-density use. (WRC-97)

55.78 - 56.9 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE S5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	55.78 - 56.9 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE S5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557		
56.9 - 57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH 5.547 5.557	56.9 - 57 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH 5.547 5.557		
57 - 58.2 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH 5.547 5.557	57 - 58.2 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH 5.547 5.557		
58.2 - 59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	58.2 - 59 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556		
59 - 59.3 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	59 - 59.3 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)		
59.3 - 64 GHz FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	59.3 - 64 GHz FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

64 - 65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	64 - 65 GHz FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556		
65 - 66 GHz EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	65 - 66 GHz EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547		

**5.557** *Additional allocation:* in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (WRC-97)

**5.557A** 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  $-26$  dB(W/MHz). (WRC-2000)

**5.558** In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, 122.25-123 GHz, 130-134 GHz, 167-174.8 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. **5.43**). (WRC-2000)

**5.558A** Use of the band 56.9-57 GHz by inter-satellite systems is limited to links between satellites in geostationary-satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed  $-147$  dB(W/(m<sup>2</sup> 100 MHz)) for all angles of arrival. (WRC-97)

**5.559** 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. **5.43**). (WRC-2000)

**5.559A** (SUP - WRC-07)

66 - 71 GHz INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION –SATELLITE 5.554	66 - 71 GHz INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION –SATELLITE 5.554		
71 - 74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	71 - 74 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		

74 - 76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561	74 - 76 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561		
76 - 77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth) 5.149	76 - 77.5 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth) 5.149		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
77.5-78 GHz AMATEUR AMATEUR-SATELLITE Radio Astronomy Space Research (space-to-Earth) 5.149	77.5-78 GHz AMATEUR AMATEUR-SATELLITE Radio Astronomy Space Research (space-to-Earth) 5.149		
78-79 GHz RADIOLOCATION Amateur Amateur-satellite Radio Astronomy Space Research (space-to-earth) 5.149 5.560	78-79 GHz RADIOLOCATION Amateur Amateur-satellite Radio Astronomy Space Research (space-to-earth) 5.149 5.560		
79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-earth) 5.149	79-81 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space Research (space-to-earth) 5.149		

**5.A118** The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. **4.10** do not apply. (WRC-15)

**5.560** In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

**5.561** 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. (WRC-2000)

81 - 84 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space Research (space-to-Earth) 5.149 5.561A	81 - 84 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space Research (space-to-Earth) 5.149 5.561A		
84 - 86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	84 - 86 GHz FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149		

**5.561A** The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis. (WRC-2000)

**5.561B** 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. (WRC-2000)

86 - 92 GHz EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	86 - 92 GHz EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band.
92 - 94 GHz FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	92 - 94 GHz FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
94 - 94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio Astronomy 5.562 5.562A	94 - 94.1 GHz EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio Astronomy 5.562 5.562A		

94.1 - 95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	94.1 - 95 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
95 - 100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION – SATELLITE 5.149 5.554	95 - 100 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION – SATELLITE 5.149 5.554		
100 - 102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	100 - 102 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		5.340: All emissions are prohibited within this band.
102 - 105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	102 - 105 GHz FIXED MOBILE RADIO ASTRONOMY 5.149 5.341		
105 - 109.5 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	105 - 109.5 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341		
109.5 - 111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	109.5 - 111.8 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		5.340: All emissions are prohibited within this band.

**5.562** The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars. (WRC-97)

**5.562A** In the bands 94-94.1 GHz and 130-134 GHz, 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 damagesome 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. (WRC-2000)

**5.562B** In the bands 105-109.5 GHz, 111.8-114.25 GHz, 155.5-158.5 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. (WRC-2000)

111.8 - 114.25 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	111.8 - 114.25 GHz FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341		
114.25 - 116 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	114.25 - 116 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		5.340: All emissions are prohibited within this band.
116 - 119.98 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	116 - 119.98 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341		

**5.562C** 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  $-148 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for all angles of arrival. (WRC-2000)

119.98 - 122.25 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	119.98 - 122.25 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	122.25-123 GHz FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)
123-130 GHz FIXED-SATELLITE (space-to-earth)	123-130 GHz FIXED-SATELLITE (space-to-earth)		

MOBILE- SATELLITE (space-to-earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	MOBILE- SATELLITE (space-to-earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554		
130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	130-134 GHz EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A		
134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy	134-136 GHz AMATEUR AMATEUR-SATELLITE Radio astronomy		
136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur –Satellite 5.149	136-141 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur –Satellite 5.149		
141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	141-148.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	148.5-151.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band.

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

**5.562E** The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz. (WRC-2000)

151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	151.5-155.5 GHz FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149		
155.5 - 158.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G	155.5 - 158.5 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G		

**5.562F** 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. (WRC-2000)

**5.562G** 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. (WRC-2000)

158.5 - 164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	158.5 - 164 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		
164 - 167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	164 - 167 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band.
167 - 174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	167 - 174.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D		
174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558	174.5-174.8 GHz FIXED INTER-SATELLITE MOBILE 5.558		
174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive)	174.8-182 GHz EARTH EXPLORATION-SATELLITE (passive)		

INTER-SATELLITE 5.562H SPACE-RESEARCH (passive)	INTER-SATELLITE 5.562H SPACE-RESEARCH (passive)		
182-185 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE-RESEARCH (passive) 5.340	182-185 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE-RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band.
185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190 GHz EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	190-191.8 GHz EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band except those provided for by No. 5.563
191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	191.8-200 GHz FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554		

**5.562H** 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 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 144 dB(W/(m<sup>2</sup> · MHz)) for all angles of arrival. (WRC-2000)

**5.563** (SUP - WRC-03)

**5.563A** 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. (WRC-2000)

200-202 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	200-202 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A		5.340: All emissions are prohibited within this band.
202 - 209 GHz EARTH EXPLORATION-SATELLITE (passive)	202 - 209 GHz EARTH EXPLORATION-SATELLITE (passive)		5.340: All emissions are prohibited within this band.

RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A		
209 - 217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	209 - 217 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341		
217 - 226 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	217 - 226 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341		
226 - 231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	226 - 231.5 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340		5.340: All emissions are prohibited within this band.
231.5 - 232 GHz FIXED MOBILE Radiolocation	231.5 - 232 GHz FIXED MOBILE Radiolocation		
232 - 235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	232 - 235 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation		
235 - 238 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	235 - 238 GHz EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B		
238 - 240 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION	238 - 240 GHz FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION		

RADIONAVIGATION RADIONAVIGATION-SATELLITE	RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240 - 241 GHz FIXED MOBILE RADIOLOCATION	240 - 241 GHz FIXED MOBILE RADIOLOCATION		
241 - 248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite 5.138 5.149	241 - 248 GHz RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite 5.138 5.149		Memorandum Circular No. 03-05-2007 Short Range Devices (SRDs)

**5.563B** 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. (WRC-2000)

248 - 250 GHz AMATEUR AMATEUR-SATELLITE Radio Astronomy 5.149	248 - 250 GHz AMATEUR AMATEUR-SATELLITE Radio Astronomy 5.149		
250 - 252 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	250 - 252 GHz EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A		5.340: All emissions are prohibited within this band.
252 - 265 GHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	252 - 265 GHz FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554		
265 - 275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A	265 - 275 GHz FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A		
275 - 3000 GHz	275 - 3000 GHz		

( NOT ALLOCATED ) MOD 5.565	( NOT ALLOCATED ) MOD 5.565		
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**5.564** (SUP - WRC-2000)

**5.565** The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service applications:

– 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): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-12)