

6.0 Table of Frequency Allocation

The ECTEL Regional Allocations are based on ITU Allocations made for region 2 as defined in the geographic regions. They are found in column 2 of the allocation table with Region 2 allocations shown in column 1.

The ECTEL allocations are closely aligned with ITU requirements of Region 2; however, there are some variations to ensure that national and regional policies are met. Where variations are made, cognisance is taken of Radio Regulation No. 4.4 which requires that any variation is subject to the condition that the associated radio installations do not cause harmful interference to the radio services or communications of other ITU Members that operate in accordance with the provisions of the radio regulations, and that the possibility of harmful interference from such services and communications is accepted.

The ECTEL Spectrum is allocated from 9 kHz to 1000 GHz. It however, is not utilised beyond 40 GHz as the proliferation of radio equipment within the ECTEL Member States is limited to those devices operating below 40 GHz. It is anticipated that with the advent of technological development

6.1 Spectrum Plan Divided into Frequency Bands

The spectrum Plan is divided into frequency bands for the ITU Region 2 and the ECTEL Tables

6.2 References to Services made in the Table

- i) Words in the ECTEL Table appearing in Upper Case refer to Primary Service of the type specified by those words
- ii) Words in the ECTEL table appearing in lower case refer to a secondary service of the type specified by those words

6.3 Conditions that apply to Certain Services

Where

- (a) A frequency band is used for the purposes of a service in accordance with the Plan and
- (b) The ITU Radio Regulations do not provide for the frequency band to be used for that service

Then the requirements for the coordination and notification of services by administrations apply to that use of the frequency band under this Plan

| Table of Frequency Allocations | |
|---|---|
| | |
| 9-110 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| Below 9 (Not allocated) | Below 9 (Not allocated) |
| 53 54 | 53 54 |
| 9-14 | 9-14 |
| RADIONAVIGATION | RADIONAVIGATION |
| 14-19.95 | 14-19.95 |
| FIXED | FIXED |
| MARITIME MOBILE 57 | MARITIME MOBILE 57 |
| 55 56 | 55 56 |
| 19.95-20.05 | 19.95-20.05 |
| STANDARD FREQUENCY AND TIME SIGNAL (20 kHz) | STANDARD FREQUENCY AND TIME SIGNAL (20 kHz) |
| 20.05-70 | 20.05-70 |
| FIXED | FIXED |
| MARITIME MOBILE 57 | MARITIME MOBILE 57 |
| 56 58 | 56 58 |
| 70-90 | 70-90 |
| FIXED | FIXED |
| MARITIME MOBILE 57 | MARITIME MOBILE 57 |
| MARITIME RADIO-NAVIGATION 60 | MARITIME RADIO-NAVIGATION 60 |
| Radiolocation 61 | Radiolocation 61 |
| 90-110 | 90-110 |
| RADIONAVIGATION 62 | RADIONAVIGATION 62 |
| Fixed | Fixed |
| 64 | 64 |
| | |
| | |
| 110-255 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 110-130 | 110-130 |
| FIXED | FIXED |
| MARITIME MOBILE | MARITIME MOBILE |
| MARITIME RADIO-NAVIGATION 60 | MARITIME RADIO-NAVIGATION 60 |
| Radiolocation 61 64 | Radiolocation 61 64 |
| 130-160 | 130-160 |
| FIXED | FIXED |
| MARITIME MOBILE 64 | MARITIME MOBILE 64 |
| | |
| 160-190 | 160-190 |
| FIXED | FIXED |
| 190-200 | 190-200 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| | |
| | |

| 200-495 kHz | |
|---|---|
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 200-275 | 200-275 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| Aeronautical mobile | Aeronautical mobile |
| 275-285 | 275-285 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| Aeronautical mobile | Aeronautical mobile |
| Maritime radionavigation (radiobeacons) | Maritime radionavigation (radiobeacons) |
| 285-315 | 285-300 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| MARITIME RADIONAVIGATION | |
| (radiobeacons) 73 | 300-325 |
| | MARITIME RADIONAVIGATION |
| 315-325 | |
| MARITIME RADIONAVIGATION | |
| (radiobeacons) 73 | |
| Aeronautical radionavigation | |
| 325-335 | 325-335 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIO NAVIGATION |
| Aeronautical mobile | |
| Maritime radionavigation (radiobeacons) | |
| 335-405 | 335-405 |
| AERONAUTICAL | AERONAUTICAL |
| RADIONAVIGATION | RADIONAVIGATION |
| 405-415 | 405-415 |
| RADIONAVIGATION 76 | RADIONAVIGATION 76 |
| Aeronautical mobile | Aeronautical mobile |
| 415-495 | 415-495 |
| MARITIME MOBILE 79 79A | MARITIME MOBILE 79 79A |
| Aeronautical radionavigation 80 | Aeronautical Radionavigation 80 |
| | |
| | |
| 495-1 800 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 495-505 | 495-505 |
| MOBILE (distress and calling) 83 | MOBILE (distress and calling) 83 |
| 505-510 | 505-510 |
| MARITIME MOBILE 79 | MARITIME MOBILE 79 |
| 510-525 | 510-525 |
| MOBILE 79A 84 | |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| 525-535 | 525-535 |
| BROADCASTING 86 | STANDARD AM RADIO BROADCASTING 86 |
| AERONAUTICAL RADIONAVIGATION | |
| | |

| | |
|--|--|
| 535-1 605 BROADCASTING | 535-1 605 BROADCASTING |
| 1 605-1 625 BROADCASTING 89 90 | 1 605-1 625 BROADCASTING 89 90 |
| 1 625-1 705 | |
| FIXED | BROADCASTING 89 |
| MOBILE | E.1 |
| BROADCASTING 89 | |
| Radiolocation 90 | |
| 1 705-1 800 | 1 705-1 800 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| RADIOLOCATION | RADIOLOCATION |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| | |
| | |
| 1 800-2 194 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 800-1 850 | 1 800-2 000 |
| AMATEUR | AMATEUR |
| 1 850-2 000 | |
| AMATEUR | |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE except aeronautical mobile |
| RADIOLOCATION | RADIOLOCATION |
| RADIONAVIGATION | RADIONAVIGATION |
| 102 | 102 |
| 2 000-2 065 | 2 000-2 065 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 2 065-2 107 | 2 065-2 107 |
| MARITIME MOBILE 105 | MARITIME MOBILE 105 |
| 106 | 106 |
| 2 107-2 170 | 2 107-2 170 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 2 170-2 173.5 | 2 170-2 173.5 |
| MARITIME MOBILE | MARITIME MOBILE |
| | |
| | |
| | |
| | |
| 2 173.5-2 190.5 | 2 173.5-2 190.5 |
| MOBILE (distress and calling) | MOBILE (distress and calling) |
| 108 109 110 111 | 108 109 110 111 E.2 |
| 2 190.5-2 194 | 2 190.5-2 194 |

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|--|-----------------------------|
| MARITIME MOBILE | MARITIME MOBILE |
| | |
| 2 194-3 230 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 2 194-2 300 | 2 194-2 300 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 112 | 112 |
| 2 300-2 495 | 2 300-2 495 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| BROADCASTING 113 | BROADCASTING 113 |
| 2 495-2 501 | 2 495-2 501 |
| STANDARD FREQUENCY AND TIME | STANDARD FREQUENCY AND TIME |
| SIGNAL (2 500 kHz) | SIGNAL |
| 2 501-2 502 | 2 501-2 502 |
| STANDARD FREQUENCY AND TIME | STANDARD FREQUENCY AND TIME |
| SIGNAL | SIGNAL |
| Space Research | |
| 2 502-2 505 | 2 502-2 505 |
| STANDARD FREQUENCY AND TIME | STANDARD FREQUENCY AND TIME |
| SIGNAL | SIGNAL |
| 2 505-2 850 | 2 505-2 850 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 2 850-3 025 | 2 850-3 025 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 111 115 | 111 115 |
| 3 025-3 155 | 3 025-3 155 |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| 3 155-3 200 | 3 155-3 200 |
| FIXED | FIXED |
| MOBILE exc ept aeronautical mobile (R) | MOBILE |
| 116 117 | 116 117 |
| 3 200-3 230 | 3 200-3 230 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE |
| BROADCASTING 113 | BROADCASTING 113 |
| 116 | 116 |
| | |
| 3 230-5 003 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 3 230-3 400 | 3 230-3 400 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |

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|--|---|
| BROADCASTING 113 116 118 | BROADCASTING 113 116 118 |
| 3 400-3 500 | 3 400-3 500 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 3 500-3 750 | 3 500-4 000 |
| AMATEUR | AMATEUR |
| 119 | |
| 3 750-4 000 | 19 |
| AMATEUR FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE except aeronautical mobile ® |
| 122 125 | 122 125 |
| 4 000-4 063 | 4 000-4 063 |
| FIXED | FIXED |
| MARITIME MOBILE 127 | MARITIME MOBILE 127 |
| 126 | 126 |
| 4 063-4 438 | 4 063-4 438 |
| MARITIME MOBILE 79A 109 110 130 131 132 128 129 | MARITIME MOBILE 79A 109 110 130 131 132 128 129 E3 |
| | |
| 4 438-4 650 | 4 438-4 650 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE |
| 4 650-4 700 | 4 650-4 700 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 4 700-4 750 | 4 700-4 750 |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| 4 750-4 850 | 4 750-4 850 |
| FIXED | SHORT WAVE BROADCAST |
| MOBILE except aeronautical mobile (R) | |
| BROADCASTING 113 | 113 |
| 4 850-4 995 | 4 850-4 995 |
| FIXED LAND MOBILE | FIXED LAND MOBILE |
| BROADCASTING 113 | BROADCASTING 113 |
| 4 995-5 003 | 4 995-5 003 |
| STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz) | STANDARD FREQUENCY AND TIME SIGNAL |
| | |
| 5 003-7 450 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 5 003-5 005 | 5 003-5 005 |
| STANDARD FREQUENCY AND TIME SIGNAL | STANDARD FREQUENCY AND TIME SIGNAL |
| Space research | |
| 5 005-5 060 | 5 005-5 060 |
| FIXED | SHORTWAVE BROADCAST |
| BROADCASTING 113 | |
| 5 060-5 250 | 5 060-5 250 |

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|--|--------------------------------------|
| FIXED Mobile except aeronautical mobile 133 | FIXED MOBILE |
| 5 250-5 450 | 5 250-5 450 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| 5 450-5 480 | 5 450-5 730 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 5 480-5 680 | TRANSOCEANIC FLIGHTS |
| AERONAUTICAL MOBILE (R) 111 115 | |
| 5 680-5 730 | |
| AERONAUTICAL MOBILE (OR) | |
| 111 115 | 111 115 |
| 5 730-5 900 | 5 730-5 900 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE |
| 5 900-5 950 | 5 900-6 200 |
| BROADCASTING 134 136 | SHORT WAVE BROADCAST |
| 5 950-6 200 | |
| BROADCASTING | |
| 6 200-6 525 | 6 200-6 525 |
| MARITIME MOBILE 109 110 130 132 137 | MARITIME MOBILE 109 110 130 132 137 |
| | |
| | |
| 6 525-6 685 | 6 525-6 685 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 6 685-6 765 | 6 685-6 765 |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| 6 765-7 000 | 6 765-7 000 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE |
| 138 138A 139 | 138 138A 139 |
| 7 000-7 100 | 7 000-7 300 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE | |
| 140 141 141A | |
| 7 100-7 200 | |
| AMATEUR | |
| 141A 141B 141C 142 | |
| 7 200-7 300 | |
| AMATEUR | |
| 142 | 140 141 141A 141B 141C 142 |
| 7 300-7 400 | 7 300-7 400 |
| BROADCASTING 134 | BROADCASTING 134 143A 143B 143C 143D |
| 143 143A 143B 143C 143D | 7 350-7 450 |
| | FIXED |
| 7 400-7 450 | MOBILE |
| FIXED | |
| MOBILE except aeronautical mobile (R) | |
| | |
| 7 450-13 360 kHz | |
| | |

| Allocation to services | |
|---|--|
| ITU Region 2 | O.E.C.S |
| 7 450-8 100 | 7 450-8 100 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile (R) | MOBILE except aeronautical mobile (R) |
| 143E 144 | 143E 144 |
| 8 100-8 195 | 8 100-8 195 |
| FIXED | FIXED |
| MARITIME MOBILE | MARITIME MOBILE |
| 8 195-8 815 | 8 195-8 815 |
| MARITIME MOBILE 109 110 132 145 111 | MARITIME MOBILE 109 110 132 145 111 |
| | |
| | |
| 8 815-8 965 | 8 815-8 965 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 8 965-9 040 | 8 965-9 040 |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| 9 040-9 400 | 9 040-9 400 |
| FIXED | FIXED |
| 9 400-9 500 | 9 400-9 900 |
| BROADCASTING 134 146 | SHORT WAVE BROADCAST |
| 9 500-9 900 | |
| BROADCASTING 147 | |
| 9 900-9 995 | 9 900-9 995 |
| FIXED | FIXED |
| 9 995-10 003 | 9 995-10 003 |
| STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 111 | STANDARD FREQUENCY AND TIME SIGNAL 111 |
| 10 003-10 005 | 10 003-10 005 |
| STANDARD FREQUENCY AND TIME SIGNAL | STANDARD FREQUENCY AND TIME SIGNAL |
| Space research 111 | |
| 10 005-10 100 | 10 005-10 100 |
| AERONAUTICAL MOBILE (R) 111 | AERONAUTICAL MOBILE 111 |
| 10 100-10 150 | 10 100-10 150 |
| FIXED | FIXED |
| Amateur | Amateur |
| 10 150-11 175 | 10 150-11 175 |
| FIXED | FIXED |
| Mobile except aeronautical mobile (R) | |
| 11 175-11 275 | 11 175-11 275 |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| 11 275-11 400 | 11 275-11 400 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 11 400-11 600 | 11 400-11 600 |
| FIXED | FIXED |
| 11 600-11 650 | 11 600-12 050 |
| BROADCASTING 134 146 | SHORT WAVE BROADCAST |
| 11 650-12 050 | |
| BROADCASTING 147 | |
| 12 050-12 100 | 12 050-12 100 |
| BROADCASTING 134 146 | BROADCASTING 134 146 |

| | |
|--|--|
| 12 100-12 230 FIXED | 12 100-12 230 FIXED |
| 12 230-13 200 MARITIME MOBILE 109 110 132 145 | 12 230-13 200 MARITIME MOBILE 109 110 132 145 |
| | |
| 13 200-13 260 AERONAUTICAL MOBILE (OR) | 13 200-13 260 AERONAUTICAL MOBILE |
| 13 260-13 360 AERONAUTICAL MOBILE (R) | 13 260-13 360 AERONAUTICAL MOBILE |
| | |
| 13 360-18 030 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 13 360-13 410 FIXED RADIO ASTRONOMY 149 | 13 360-13 410 FIXED RADIO ASTRONOMY 149 |
| 13 410-13 570 FIXED Mobile except aeronautical mobile (R) 15 | 13 410-13 570 FIXED |
| 13 570-13 600 BROADCASTING 134 151 | 13 570-13 800 SHORT WAVE BROADCAST |
| 13 600-13 800 BROADCASTING | |
| 13 800-13 870 BROADCASTING 134 151 | 13 800-13 870 BROADCASTING 134 151 |
| 13 870-14 000 FIXED Mobile except aeronautical mobile (R) | 13 870-14 000 FIXED |
| 14 000-14 250 AMATEUR AMATEUR-SATELLITE | 14 000-14 350 AMATEUR |
| 14 250-14 350 AMATEUR 152 | 152 |
| 14 350-14 990 FIXED Mobile except aeronautical mobile (R) | 14 350-14 990 FIXED |
| 14 990-15 005 STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 111 | 14 990-15 005 STANDARD FREQUENCY AND TIME SIGNAL 111 |
| 15 005-15 010 STANDARD FREQUENCY AND TIME SIGNAL Space research | 15 005-15 010 STANDARD FREQUENCY AND TIME SIGNAL |
| 15 010-15 100 AERONAUTICAL MOBILE (OR) | 15 010-15 100 AERONAUTICAL MOBILE |
| 15 100-15 600 BROADCASTING | 15 100-15 800 SHORT WAVE BROADCAST |
| 15 600-15 800 BROADCASTING 134 146 | |

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|---|--|
| 15 800-16 360 FIXED 153 | 15 800-16 360 FIX ED 153 |
| 16 360-17 410 MARITIME MOBILE 109 110 132 145 | 16 360-17 410 MARITIME MOBILE 109 110 132 145 |
| 17 410-17 480 FIXED 17 480-17 550 BROADCASTING 134 146 17 550-17 900 BROADCASTING | 17 410-17 480 FIXED 17 480-17 900 SHORT WAVE BROADCAST |
| 17 900-17 970 AERONAUTICAL MOBILE (R) 17 970-18 030 AERONAUTICAL MOBILE (OR) | 17 900-17 970 AERONAUTICAL MOBILE 17 970-18 030 AERONAUTICAL MOBILE |
| 18 030-23 350 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 18 030-18 052 FIXED | 18 030-18 052 FIXED |
| 18 052-18 068 FIXED Space research | 18 052-18 068 FIXED |
| 18 068-18 168 AMATEUR AMATEUR-SATELLITE 154 | 18 068-18 168 AMATEUR 17 METER BAND |
| 18 168-18 780 FIXED Mobile except aeronautical mobile | 18 168-18 780 FIXED |
| 18 780-18 900 MARITIME MOBILE | 18 780-18 900 MARITIME MOBILE |
| 18 900-19 020 BROADCASTING 134 146 | 18 900-19 020 SHORT WAVE BROADCAST |
| 19 020-19 680 FIXED | 19 020-19 680 FIXED |
| 19 680-19 800 MARITIME MOBILE 132 | 19 680-19 800 MARITIME MOBILE |
| 19 800-19 990 FIXED | 19 800-19 990 FIXED |
| 19 990-19 995 STANDARD FREQUENCY AND TIME SIGNAL Space research 111 | 19 990-19 995 STANDARD FREQUENCY AND TIME SIGNAL |
| 19 995-20 010 STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 111 | 19 995-20 010 STANDARD FREQUENCY AND TIME SIGNAL 111 |
| 20 010-21 000 | 20 010-21 000 |

| | |
|---|------------------------------------|
| FIXED Mobile | FIXED |
| 21 000-21 450 | 21 000-21 450 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE | |
| 21 450-21 850 | 21 450-21 850 |
| BROADCASTING | SHORT WAVE BROADCAST |
| | |
| 21 850-21 870 | 21 850-21 870 |
| FIXED 155A 155 | FIXED 155A 155 |
| 21 870-21 924 | 21 870-21 924 |
| FIXED 5.155B | FIXED 5.155B |
| 21 924-22 000 | 21 924-22 000 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 22 000-22 855 | 22 000-22 855 |
| MARITIME MOBILE 132 156 | MARITIME MOBILE 132 156 |
| 22 855-23 000 | 22 855-23 000 |
| FIXED 156 | FIXED 156 |
| 23 000-23 200 | 23 000-23 200 |
| FIXED Mobile except aeronautical mobile (R) | FIXED |
| 156 | |
| 23 200-23 350 | 23 200-23 350 |
| FIXED 156A | FIXED 156A |
| AERONAUTICAL MOBILE (OR) | AERONAUTICAL MOBILE |
| | |
| 23 350-27 500 kHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 23 350-24 000 | 23 350-24 000 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile 157 | MOBILE |
| 24 000-24 890 | 24 000-24 890 |
| FIXED LAND MOBILE | FIXED LAND MOBILE |
| 24 890-24 990 | 24 890-24 990 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE | |
| 24 990-25 005 | 24 990-25 005 |
| STANDARD FREQUENCY AND TIME SIGNAL (25000 kHz) | STANDARD FREQUENCY AND TIME SIGNAL |
| 25 005-25 010 | 25 005-25 010 |
| STANDARD FREQUENCY AND TIME SIGNAL | STANDARD FREQUENCY AND TIME SIGNAL |
| Space research | |
| 25 010-25 070 | 25 010-25 070 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| 25 070-25 210 | 25 070-25 210 |
| MARITIME MOBILE | MARITIME MOBILE |
| 25 210-25 550 | 25 210-25 550 |

| | |
|---|---|
| FIXED MOBILE except aeronautical mobile | FIXED MOBILE |
| 25 550-25 670 | 25 550-25 670 |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| 149 | 149 |
| 25 670-26 100 | 25 670-26 100 |
| BROADCASTING | SHORTWAVE BROADCAST BAND |
| | |
| 26 100-26 175 MARITIME MOBILE 132 | 26 100-26 175 MARITIME MOBILE 132 |
| 26 175-27 500 | 26 175-27 500 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile 150 | MOBILE |
| | Citizens Band |
| | |
| 27.5-47 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 27.5-28 | 27.5-28 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AIDS |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 28-29.7 | 28-29.7 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE | AMATEUR-SATELLITE |
| 29.7-30.005 | 29.7-30.005 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 30.005-30.01 | 30.005-30.01 |
| SPACE OPERATION(satellite identification) | SPACE OPERATION |
| FIXED | FIXED |
| MOBILE | MOBILE |
| SPACE RESEARCH | SPACE RESEARCH |
| 30.01-37.5 | 30.01-37.5 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 37.5-38.25 | 37.5-38.25 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| Radio astronomy 149 | |
| 38.25-39.986 | 38.25-39.986 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 39.986-40.02 | 39.986-40.02 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| Space research | |
| 40.02-40.98 | 40.02-40.98 |
| FIXED | FIXED |
| MOBILE 150 | MOBILE 150 |

| | |
|-------------------------------|---------------------------------------|
| 40.98-41.015 | 40.98-41.015 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| Space research 160 161 | |
| 41.015-44 | 41.015-44 |
| FIXED | FIXED |
| MOBILE 160 161 | MOBILE 160 161 |
| 44-47 | 44-47 |
| FIXED | FIXED |
| MOBILE 162 162A | MOBILE 162 162A |
| | |
| 47-75.2 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 47-50 | 47-50 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 50-54 | 50-54 |
| AMATEUR | AMATEUR (10 METER BAND) |
| 162A 166 167 168 170 | |
| | 162A 166 167 168 170 |
| 54-68 | 54-72 |
| BROADCASTING | BROADCASTING |
| Fixed | VHF TELEVISION (Channel 2-4) |
| Mobile | |
| 172 | |
| 68-72 | |
| BROADCASTING | |
| Fixed | |
| Mobile 173 | |
| 72-73 | 72-74.8 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 73-74.6 | |
| RADIO ASTRONOMY 178 | |
| 74.6-74.8 | |
| FIXED | |
| MOBILE | |
| 74.8-75.2 | 74.8-75.2 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| 180 181 | 180 181 |
| | |
| 75.2-137.175 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 75.2-75.4 | 75.2-75.4 |
| FIXED | FIXED |
| MOBILE 179 | MOBILE 179 |

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| 75.4-76 FIXED | 75.4-76 FIXED |
| MOBILE | MOBILE |
| 76-88 | 76-88 |
| BROADCASTING | VHF TELEVISION BROADCASTING |
| Fixed | (Channel 5-6) |
| Mobile 185 | |
| 88-100 | 88-108 |
| BROADCASTING | FM RADIO BROADCASTING E.3 E3A |
| | |
| | |
| | |
| | |
| 100-108 | |
| BROADCASTING 192 194 | |
| 108-117.975 | 108-117.975 |
| AERONAUTICAL RADIONAVIGATION 197 197A | AERONAUTICAL RADIONAVIGATION 197 197A |
| 117.975-137 | 117.975-137 |
| AERONAUTICAL MOBILE (R) | AERONAUTICAL MOBILE |
| 111 198 199 200 201 202 203 203A 203B | 111 198 199 200 201 202 203 203A 203B |
| 137-137.025 | 137-138 |
| SPACE OPERATION (space-to-Earth) | METEOROLOGICAL-SATELLITE |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | MOBILE-SATELLITE 208A 209 |
| MOBILE-SATELLITE (space-to-Earth) 208A 209 | |
| SPACE RESEARCH (space-to-Earth) | |
| Fixed | |
| Mobile except aeronautical mobile (R) | |
| 204 205 206 207 208 | |
| 137.025-137.175 | |
| SPACE OPERATION (space-to-Earth) | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| SPACE RESEARCH (space-to-Earth) | |
| Fixed | |
| Mobile-satellite (space-to-Earth) 208A 209 | |
| Mobile except aeronautical mobile (R) | |
| 204 205 206 207 208 | |
| | |
| | |
| 137.175 -148 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 137.175-137.825 | |
| SPACE OPERATION (space-to-Earth) | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| MOBILE-SATELLITE (space-to-Earth) 208A 209 | |
| SPACE RESEARCH (space-to-Earth) | |
| Fixed | |
| Mobile except aeronautical mobile (R) | |
| 204 205 206 207 208 | |

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| 137.825-138 | |
| SPACE OPERATION (space-to-Earth) | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| SPACE RESEARCH (space-to-Earth) | |
| Fixed | |
| Mobile-satellite (space-to-Earth) 208A 209 | |
| Mobile except aeronautical mobile (R) | |
| 204 205 206 207 208 | |
| 138-143.6 | 138-144 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| RADIOLOCATION | RADIOLOCATION |
| Space research (space-to-Earth) | |
| 143.6-143.65 | |
| FIXED | |
| MOBILE | |
| RADIOLOCATION | |
| SPACE RESEARCH | |
| (space-to-Earth) | |
| 143.65-144 | |
| FIXED | |
| MOBILE | |
| RADIOLOCATION | |
| Space research (space-to-Earth) | |
| 144-146 | 144-148 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE 216 | |
| 146-148 | |
| AMATEUR | |
| 217 | 217 |
| | |
| | |
| 148-223 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 148-149.9 | 148-150.050 |
| FIXED | FIXED E.3C |
| MOBILE | MOBILE |
| MOBILE-SATELLITE (Earth-to-space) | |
| 218 219 221 | |
| 149.9-150.05 | |
| MOBILE-SATELLITE (Earth-to-space) 209 224A | |
| RADIONAVIGATION-SATELLITE 224B | |
| 220 222 223 | |
| 150.05-156.7625 | 150.050-156.025 |
| FIXED | FIXED |
| MOBILE 225 226 227 | MOBILE 225 226 227 E3C |
| | 156.025-162.025 |
| | MARITIME MOBILE |
| 156.7625-156.8375 | 111 226 |
| MARITIME MOBILE (distress and calling) | |

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|---|-----------------------------|
| 111 226 | |
| 156.8375-174 | |
| FIXED | |
| MOBILE 226 230 231 232 | 162.025-174 |
| | FIXED |
| | MOBILE 226 230 231 232 E.3C |
| 174-216 | 174-216 |
| BROADCASTING | VHF TELEVISION BROADCAST |
| Fixed Mobile 234 | (Channel 7-13) |
| 216-220 | 216-220 |
| FIXED | FIXED |
| MARITIME MOBILE | MARITIME MOBILE |
| Radiolocation 241 242 | |
| | |
| | |
| 220-335.4 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 220-225 | 220-225 |
| AMATEUR | AMATEUR |
| FIXED | FIXED |
| MOBILE | MOBILE |
| Radiolocation 241 | |
| 225-235 | 225-328.6 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 235-267 | Digital Audio Broadcast E.4 |
| FIXED | |
| MOBILE | |
| 111 199 252 254 256 256A | |
| 267-272 | |
| FIXED | |
| MOBILE | |
| Space operation (space-to-Earth) | |
| 254 257 | |
| 272-273 | |
| SPACE OPERATION (space-to-Earth) | |
| FIXED | |
| MOBILE | |
| 254 | |
| 273-312 | |
| FIXED | |
| MOBILE | |
| 254 | |
| 312-315 | |
| FIXED | |
| MOBILE | |
| Mobile-satellite (Earth-to-space) 254 255 | |
| 315-322 | |
| FIXED | |
| MOBILE | |

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| 254 | |
| 322-328.6 | |
| FIXED | |
| MOBILE | |
| RADIO ASTRONOMY 149 | |
| 328.6-335.4 | 328.6-335.4 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| 258 259 | 258 259 |
| | |
| 335.4-410 MHz | |
| | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 335.4-387 | 335.4-399.9 |
| FIXED | <u>E.5</u> |
| MOBILE 254 | (STUDIO TO TRANSMITTER LINK) |
| | |
| 387-390 | |
| FIXED | |
| MOBILE | |
| Mobile-satellite (space-to-Earth) 208A 254 255 | |
| 390-399.9 | |
| FIXED | |
| MOBILE 254 | |
| 399.9-400.05 | 399.9-400.05 |
| MOBILE-SATELLITE (Earth-to-space) 209 224A | MOBILE-SATELLITE 209 224A |
| RADIONAVIGATION-SATELLITE 222 224B 260 220 | RADIONAVIGATION-SATELLITE 222 224B 260 220 |
| 400.05-400.15 | 400.05-400.15 |
| STANDARD FREQUENCY AND TIME | STANDARD FREQUENCY AND TIME |
| SIGNAL-SATELLITE (400.1 MHz) | SIGNAL-SATELLITE |
| 261 262 | 261 262 |
| 400.15-401 | 400.15-403 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AIDS |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | METEOROLOGICAL-SATELLITE |
| MOBILE-SATELLITE (space-to-Earth) 208A 209 | |
| SPACE RESEARCH (space-to-Earth) 263 | |
| Space operation (space-to-Earth) | |
| 262 264 | |
| 401-402 | |
| METEOROLOGICAL AIDS | |
| SPACE OPERATION (space-to-Earth) | |
| EARTH EXPLORATION-SATELLITE (Earth-to-space) | |
| METEOROLOGICAL-SATELLITE (Earth-to-space) | |
| Fixed | |
| Mobile except aeronautical mobile | |
| 402-403 | |
| METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) | |
| METEOROLOGICAL-SATELLITE (Earth-to-space) | |
| Fixed | |

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| Mobile except aeronautical mobile | |
| 403-406 | 403-406 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AIDS |
| Fixed | |
| Mobile except aeronautical mobile | |
| | |
| 406-406.1 | 406-406.1 |
| MOBILE-SATELLITE (Earth-to-space) | MOBILE-SATELLITE |
| 266 267 | 266 267 |
| 406.1-410 | 406.1-410 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| 149 | 149 |
| | |
| | |
| 410-460 MHz | |
| | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 410-420 | 410-420 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| SPACE RESEARCH (space-to-space) 268 | SPACE RESEARCH 268 |
| 420-430 | 420-430 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| Radiolocation 269 270 271 | |
| 430-432 | 430-440 |
| RADIOLOCATION | RADIOLOCATION |
| Amateur 271 276 277 278 279 | Amateur 271 276 277 278 279 |
| | |
| 432-438 | |
| RADIOLOCATION | |
| Amateur | |
| Earth exploration-satellite (active) 279A | |
| 271 276 277 278 279 281 282 | |
| 438-440 | |
| RADIOLOCATION | |
| Amateur | |
| 271 276 277 278 279 | |
| 440-450 | 440-454.675 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| Radiolocation | |
| 269 270 271 284 285 286 | |
| | |
| | |
| 450-455 | |
| FIXED | |
| MOBILE | 454.675-454.975 |

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| 209 271 286 286A 286B 286C 286D 286E | MOBILE TELEPHONE AIR (BASE) |
| | |
| | 454.975-462.5625 |
| | <u>E.6</u> |
| 455-456 | (OUTSIDE BROADCAST TELEVISION/RADIO) |
| FIXED | |
| MOBILE | |
| MOBILE-SATELLITE | |
| (Earth-to-space) 286A 286B 286C | |
| | |
| 209 | |
| 456-459 | |
| FIXED | |
| MOBILE | |
| 271 287 288 | |
| | |
| 459-460 | |
| FIXED | |
| MOBILE | |
| MOBILE-SATELLITE | |
| (Earth-to-space) 286A 286B 286C | |
| 209 | |
| | |
| | |
| 460-890 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 460-470 | |
| FIXED | |
| MOBILE | 462.5625-467.7125 |
| Meteorological - Satellite (space-to-Earth) | FAMILY RADIO SERVICE/FIXED/MOBILE |
| 287 288 289 290 | 467.7125-470 |
| | <u>E.7</u> |
| | (OUTSIDE BROADCAST TELEVISION/RADIO) |
| 470-512 | 470-512 |
| BROADCASTING | BROADCASTING |
| Fixed | (UHF TELEVISION/RADIO) |
| Mobile 292 293 | (Channel 14-69) |
| 512-608 | 512-608 |
| BROADCASTING | BROADCASTING |
| 297 | 297 |
| 608-614 | 608-614 |
| RADIO ASTRONOMY | MOBILE |
| Mobile-satellite except | |
| aeronautical mobile-satellite | |
| (Earth-to-space) | |
| 614-806 | 614-806 |
| BROADCASTING | BROADCASTING |
| Fixed | Fixed |

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| Mobile 293 309 311 | Mobile 293 309 311 |
| 806-890 | 806-824.040 |
| FIXED | LAND MOBILE |
| MOBILE 317A | 824.040-890 |
| BROADCASTING | MOBILE |
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| | |
| 890-1 300 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 890-902 | 890-902 |
| FIXED | MOBILE (P-GSM) |
| MOBILE except aeronautical mobile 317A | |
| Radiolocation | |
| 318 325 | |
| 902-928 | 902-928 E. 8 |
| FIXED | FIXED |
| Amateur | Amateur |
| Mobile except aeronautical mobile 325A | Mobile except aeronautical mobile 325A |
| Radiolocation 150 325 326 | |
| | |
| 928-942 | 928-935 |
| FIXED | MOBILE |
| MOBILE except aeronautical mobile 317A | |
| Radiolocation | |
| 325 | 935-947 |
| 942-960 | MOBILE |
| FIXED | |
| MOBILE 5.317A | 947-960 |
| | MOBILE 5.317A |
| | |
| 960-1 164 | 960-1 215 |
| AERONAUTICAL RADIONAVIGATION 328 | AERONAUTICAL NAVIGATION 328 |
| 1 164-1215 | |
| AERONAUTICAL RADIONAVIGATION 328 | |
| RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 328B 328A | |
| 1 215-1 240 | 1 215-1 240 |
| EARTH EXPLORATION-SATELLITE (active) | RADIOLOCATION |
| RADIOLOCATION | RADIONAVIGATION-SATELLITE 328B 329 329A |
| RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 328B 329 329A | |
| SPACE RESEARCH (active) 330 331 332 | |
| 1 240-1 300 | 1 240-1 260 |
| EARTH EXPLORATION-SATELLITE (active) | RADIOLOCATION |
| RADIOLOCATION | RADIONAVIGATION-SATELLITE |

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| RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 328B 329 329A | |
| SPACE RESEARCH (active) | |
| Amateur | Amateur |
| 282 330 331 332 335 335A | 282 330 331 332 335 335A |
| | 1 260-1 300 |
| | RADIOLOCATION |
| | Amateur 282 330 331 332 335 335A |
| 1 300-1 525 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 300-1 350 | 1 300-1 350 |
| AERONAUTICAL RADIONAVIGATION 337 | AERONAUTICAL RADIONAVIGATION 337 |
| RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 149 337A | |
| 1 350-1 400 | 1 350-1 400 |
| RADIOLOCATION 149 334 339 339A | RADIOLOCATION 149 334 339 339A |
| | |
| 1 400-1 427 | 1 400-1 427 |
| EARTH EXPLORATION-SATELLITE (passive) | RADIO ASTRONOMY |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) 340 341 | |
| 1 427-1 429 | 1 427-1 429 |
| SPACE OPERATION (Earth-to-space) | FIXED (Point to Point Microwave) |
| FIXED | SPACE OPERATION |
| MOBILE except aeronautical mobile 341 | MOBILE |
| 1 429-1 452 | 1 429-1 452 |
| FIXED | FIXED |
| MOBILE 343 339A 341 | MOBILE 343 339A 341 |
| 1 452-1 492 | 1 452-1 492 |
| FIXED | FIXED |
| MOBILE 343 | MOBILE 343 |
| BROADCASTING 345 347 | BROADCASTING 345 347 |
| BROADCASTING-SATELLITE 345 347 347A 341 344 | |
| 1 492-1 518 | 1 492-1 525 |
| FIXED | FIXED |
| MOBILE 343 341 344 | MOBILE 343 341 344 |
| | MOBILE-SATELLITE |
| | |
| 1 518-1 525 | |
| FIXED | |
| MOBILE 343 | |
| MOBILE-SATELLITE | |
| (space-to-Earth) 348 348A 348B 348C 341 344 | |
| | |
| | |

| 1 525-1 610 MHz | |
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| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 525-1 530 | 1 525-1 530 |
| SPACE OPERATION (space-to-Earth) | MOBILE-SATELLITE 5.347A 5.351A |
| MOBILE-SATELLITE (space-to-Earth) | |
| 5.347A 5.351A | |
| Earth exploration-satellite | |
| Fixed | |
| Mobile 343 341 351 354 | |
| 1 530-1 535 | 1 530-1 535 |
| SPACE OPERATION (space-to-Earth) | MARITIME MOBILE-SATELLITE |
| MOBILE-SATELLITE (space-to-Earth) 347A 351A 353A | |
| Earth exploration-satellite | |
| Fixed | |
| Mobile 343 341 351 354 | |
| 1 535-1 559 | 1 535-1 559 |
| MOBILE-SATELLITE (space-to-Earth) | MOBILE-SATELLITE |
| 347A 351A 341 351 353A 354 | 347A 351A 341 351 353A 354 |
| 355 356 357 357A 359 362A | 355 356 357 357A 359 362A |
| 1 559-1 610 | 1 559-1 610 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| RADIONAVIGATION-SATELLITE | 1600 |
| (space-to-Earth) (space-to-space) 328B | <i>GMDSS (Satellite EPIRBs)</i> |
| 329A 341 362B 362C 363 | |
| | |
| | |
| 1 610-1 660 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 610-1 610.6 | 1 610-1 621.350 |
| MOBILE-SATELLITE (Earth-to-space) | Mobile Satellite (GMPCS) (Earth-to-space) |
| 351A | 351A |
| AERONAUTICAL RADIONAVIGATION | |
| RADIODETERMINATION - SATELLITE | |
| (Earth-to-space) | |
| | |
| 341 364 366 367 368 370 372 | |
| 1 610.6-1 613.8 | |
| MOBILE-SATELLITE (Earth-to-space) | |
| 351A | |
| RADIO ASTRONOMY | |
| ERONAUTICAL | |
| RADIONAVIGATION | |
| RADIODETERMINATION-SATELLITE | |
| (Earth-to-space) | |
| 149 341 364 366 367 368 370 372 | |
| 1 613.8-1 626.5 | |
| MOBILE-SATELLITE (Earth-to-space) 351A | |

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| AERONAUTICAL RADIONAVIGATION | 1 621.350 -1 660.500 |
| RADIODETERMINATION-SATELLITE (Earth-to-space) | MOBILE-SATELLITE 351A |
| Mobile-satellite (space-to-Earth) | |
| 347A | |
| | |
| 341 364 365 366 367 368 370 372 | |
| 1 626.5-1 660 | |
| MOBILE-SATELLITE (Earth-to-space) | |
| 351A 341 351 353A 354 355 | 351A 341 351 353A 354 355 |
| 357A 359 362A 374 375 376 | 357A 359 362A 374 375 376 |
| | |
| | |
| 1 660-1 710 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 660-1 660.5 | 1 660.500 -1 668.400 |
| MOBILE-SATELLITE (Earth-to-space) 351A | RADIO ASTRONOMY |
| RADIO ASTRONOMY | |
| 149 341 351 354 362A 376A | 149 341 351 354 362A 376A |
| | |
| 1 660.5-1 668 | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| Fixed | |
| Mobile except aeronautical mobile | |
| 149 341 379 379A | |
| 1 668-1 668.4 | |
| MOBILE-SATELLITE (Earth-to-space) | |
| 348C 379B 379C | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| Fixed | |
| Mobile except aeronautical mobile | |
| 149 341 379 379A 379D | |
| 1 668.4-1 670 | 1 668.4-1 710 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AIDS |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| MOBILE-SATELLITE (Earth-to-space) 348C 379B 379C | |
| | |
| RADIO ASTRONOMY | |
| 149 341 379D 379E | |
| 1 670-1 675 | |
| METEOROLOGICAL AIDS | |
| FIXED | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| MOBILE 380 | |
| MOBILE-SATELLITE (Earth-to-space) 348C 379B 341 379D 379E 380A | |
| 1 675-1 690 | |

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| METEOROLOGICAL AIDS FIXED | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| MOBILE except aeronautical mobile | |
| 341 | |
| 1690-1700 | |
| METEOROLOGICAL AIDS | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| 289 341 381 | |
| 1700-1710 | |
| FIXED | |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | |
| MOBILE except aeronautical mobile 289 341 | |
| | |
| | |
| 1 710-2 170 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 1 710-1 930 | 1 710-1 990 |
| FIXED | GSM 1800 |
| MOBILE 380 384A .388A 388B | GSM1900 |
| 149 341 385 386 387 388 | EGSM, PGSM |
| | |
| | |
| | |
| | |
| | |
| 1 930-1 970 | |
| FIXED | |
| MOBILE 388A 388B | |
| Mobile-satellite (Earth-to-space) 388 | |
| 1 970-1 980 | |
| FIXED | |
| MOBILE 388A 388B 388 | |
| 1 980-2 010 | |
| FIXED | |
| MOBILE | 1990-2025 E.9 |
| MOBILE-SATELLITE (Earth-to-space) 351A | MOBILE |
| 388 389A 389B 389F | |
| 2 010-2 025 | |
| FIXED | |
| MOBILE | |
| MOBILE-SATELLITE (Earth-to-space) | |
| | |
| 388 389C 389E 390 | |
| 2 025-2 110 | 2 025-2 110 |
| SPACE OPERATION (Earth-to-space) (space-to-space) | BROADCAST STUDIO TO TRANSMITTER LINKS |
| EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) | MOBILE |
| FIXED | |
| MOBILE 391 | |

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| SPACE RESEARCH (Earth-to-space) (space-to-space) 392 | |
| 2 110-2 120 | 2110-2200 |
| FIXED | MOBILE 388A 388B |
| MOBILE 388A 388B | |
| SPACE RESEARCH (deep space) (Earth-to-space) 388 | |
| 2 120-2 160 | |
| FIXED | |
| MOBILE 388A 388B | |
| Mobile-satellite (space-to-Earth) 5.388 | |
| 2 160-2 170 | |
| FIXED | |
| MOBILE | |
| MOBILE-SATELLITE (space-to-Earth) | |
| 388 389C 389E 390 | |
| | |
| | |
| 2 170-2 520 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 2 170-2 200 | |
| FIXED | |
| MOBILE | |
| MOBILE-SATELLITE (space-to-Earth) 351A | |
| 388 389A 389F 392A | |
| 2 200-2 290 | 2 200-2400 |
| SPACE OPERATION (space-to-Earth) (space-to-space) | FIXED |
| EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) | MOBILE |
| FIXED | MOBILE-SATELLITE |
| MOBILE 391 | |
| SPACE RESEARCH (space-to-Earth) (space-to-space) 392 | |
| 2 290-2 300 | |
| FIXED | |
| MOBILE except aeronautical mobile | |
| SPACE RESEARCH (deep space) (space-to-Earth) | |
| 2 300-2 450 | 2 300-2 450 |
| FIXED | FIXED |
| | MOBILE |
| RADIOLOCATION | Amateur |
| Amateur 150 282 393 394 396 | 2 450-2 483.5 |
| | FIXED (Fixed Wireless Access, FWA) LINKS |
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| 2 450-2 483.5 | |
| FIXED | |
| MOBILE | |
| RADIOLOCATION 150 394 | |
| 2 483.5-2 500 | 2 483.5-2 500 |
| FIXED | GMPCS (Space to Earth) 351A |
| MOBILE | FIXED |
| MOBILE-SATELLITE | MOBILE |
| (space-to-Earth) 351A | |
| RADIOLOCATION | |
| RADIODETERMINATION-SATELLITE | |
| (space-to-Earth) 398 150 402 | |
| 2 500-2 520 | 2 500-2 520 |
| FIXED 409 411 | FIXED 409 411 |
| FIXED -SATELLITE (space-to-Earth) 415 | FIXED -SATELLITE 415 |
| MOBILE except aeronautical mobile 384A | MOBILE 384A |
| MOBILE-SATELLITE (space-to-Earth) 351A 403 | MOBILE-SATELLITE 351A 403 |
| 404 407 414 415A | 404 407 414 415A |
| | |
| | |
| | |
| 2 520-2 700 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 2 520-2 655 | 2 520-2 655 |
| FIXED 409 411 | FIXED 409 411 E.10 |
| FIXED -SATELLITE (space-to-Earth) 415 | FIXED -SATELLITE 415 |
| MOBILE except aeronautical mobile 384A | MOBILE 384A |
| BROADCASTING-SATELLITE 413 416 | BROADCASTING-SATELLITE 413 416 |
| 339 403 417C 417D 418B 418C | 339 403 417C 417D 418B 418C |
| 2 655-2 670 | 2 655-2 670 |
| FIXED 409 411 | FIXED 409 411 E.10A |
| FIXED -SATELLITE (Earth-to-space) (space-to-Earth) | FIXED -SATELLITE 347A 415 |
| 347A 415 | MOBILE 384A |
| MOBILE except aeronautical mobile 384A | BROADCASTING-SATELLITE |
| BROADCASTING-SATELLITE | 347A 413 416 |
| 347A 413 416 | |
| Earth exploration-satellite (passive) | |
| Radio astronomy Space research (passive) 149 420 | |
| 2 670-2 690 | 2 670-2 690 |
| FIXED 409 411 | FIXED 409 411 E.10A |
| FIXED -SATELLITE | FIXED -SATELLITE |
| (Earth-to-space) (space-to-Earth) 347A 415 | MOBILE |
| MOBILE except aeronautical mobile 384A | BROADCASTING-SATELLITE |
| MOBILE-SATELLITE (Earth-to-space) 351A | |
| Earth exploration-satellite (passive) | |
| Radio astronomy Space research (passive) | |
| 149 419 420 | |
| 2 690-2 700 | 2 690-2 700 |
| EARTH EXPLORATION-SATELLITE (passive) | FIXED |

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|--|---|
| RADIO ASTRONOMY SPACE RESEARCH (passive) 340 422 | FIXED -SATELLITE MOBILE |
| | BROADCASTING-SATELLITE |
| | |
| 2 700-4 800 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 2 700-2 900 | 2 700-2 900 |
| AERONAUTICAL RADIONAVIGATION 37 Radiolocation 423 424 | AERONAUTICAL RADIONAVIGATION 37 |
| 2 900-3 100 | 2 900-3 100 |
| RADIOLOCATION 424A RADIONAVIGATION 426 425 427 | RADIOLOCATION 424A |
| 3 100-3 300 | 3 100-3 300 |
| RADIOLOCATION Earth exploration-satellite (active) Space research (active) 149 428 | RADIOLOCATION |
| 3 300-3 400 | 3 300-3 400 |
| RADIOLOCATION Amateur Fixed Mobile 149 430 | RADIOLOCATION FIXED (Fixed Wireless Access Links) E.11 |
| 3 400-3 500 FIXED FIXED -SATELLITE (space-to-Earth) Amateur Mobile Radiolocation 433 282 432 | 3 400-3 500 FIXED (Fixed Wireless Access Links) E.11 FIXED -SATELLITE Amateur |
| 3 500-3 700 FIXED FIXED -SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 433 435 | 3 500-3 700 FIXED (FWA) E.11A FIXED -SATELLITE (space-to-Earth) MOBILE |
| 3 700-4 200 FIXED FIXED -SATELLITE (space-to-Earth) MOBILE except aeronautical mobile | 3 700-4 200 FIXED FIXED -SATELLITE (space-to-Earth) MOBILE |
| 4 200-4 400 AERONAUTICAL RADIONAVIGATION 438 439 440 | 4 200-4 400 AERONAUTICAL RADIONAVIGATION 438 439 440 |
| 4 400-4 500 FIXED MOBILE | 4 400-4 500 FIXED MOBILE |
| 4 500-4 800 FIXED FIXED -SATELLITE (space-to-Earth) 441 MOBILE | 4 500-4 800 FIXED FIXED -SATELLITE MOBILE |

| 4 800-5 570 MHz | |
|--|---------------------------------------|
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 4 800-4 990 | 4 800-4 990 |
| FIXED | FIXED |
| MOBILE 442 Radio astronomy 149 339 443 | MOBILE 442 |
| 4 990-5 000 | 4 990-5 000 |
| FIXED MOBILE except aeronautical mobile | FIXED MOBILE |
| RADIO ASTRONOMY Space research (passive) 149 | |
| 5 000-5 010 | 5 000-5 091 |
| AERONAUTICAL RADIONAVIGATION | AERONAUTICAL RADIONAVIGATION |
| RADIONAVIGATION-SATELLITE (Earth-to-space) | |
| 367 | |
| 5 010-5 030 | |
| AERONAUTICAL RADIONAVIGATION | |
| RADIONAVIGATION-SATELLITE (space-to-Earth) | |
| (space-space) 328B 443B 367 | |
| 5 030-5 150 | |
| AERONAUTICAL RADIONAVIGATION | |
| 367 444 444A | 5 091-5 250 |
| 5 150-5 250 | MOBILE SATELLITE |
| AERONAUTICAL RADIONAVIGATION | GMPCS (Earth to Space Communications) |
| FIXED - SATELLITE (Earth-to-space) 447A | |
| MOBILE except aeronautical mobile 446A 446B | Fixed |
| 446 447 447B 447C | |
| 5 250-5 255 | 5 250-5 350 |
| EARTH EXPLORATION-SATELLITE (active) | RADIOLOCATION |
| RADIOLOCATION | |
| SPACE RESEARCH 447D | |
| MOBILE except aeronautical mobile 446A 447F | Fixed |
| 447E 448 448A | |
| 5 255-5 350 | |
| EARTH EXPLORATION-SATELLITE (active) | |
| RADIOLOCATION | |
| SPACE RESEARCH (active) | |
| MOBILE except aeronautical mobile 446A 447F | |
| 447E 448 448A | |
| 5 350-5 460 | 5 350-5 460 |
| EARTH EXPLORATION-SATELLITE (active) 448B | AERONAUTICAL RADIONAVIGATION 449 |
| SPACE RESEARCH (active) 448C | |
| AERONAUTICAL RADIONAVIGATION 449 | Fixed |
| RADIOLOCATION 448D | |
| 5 460-5 470 | 5 460-5 470 |
| RADIONAVIGATION 449 | RADIONAVIGATION 449 |
| EARTH EXPLORATION-SATELLITE (active) | |
| SPACE RESEARCH (active) | Fixed |
| RADIOLOCATION 448D 448B | |
| 5 470-5 570 | 5 470-5 650 |
| MARITIME RADIONAVIGATION | MARITIME RADIONAVIGATION |

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|---|---------------------------------------|
| MOBILE except aeronautical mobile 446A 450A | |
| EARTH EXPLORATION-SATELLITE (active) | |
| SPACE RESEARCH (active) | |
| RADIOLOCATION 450B 448B 450 451 | |
| | |
| 5 570-7 250 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 5 570-5 650 | |
| MARITIME RADIONAVIGATION | |
| MOBILE except aeronautical mobile 446A 450A | |
| RADIOLOCATION 450B 450 451 452 | |
| 5 650-5 725 | 5 650-5 752 |
| RADIOLOCATION | RADIOLOCATION |
| MOBILE except aeronautical mobile 446A 450A | |
| Amateur | Fixed |
| Space research (deep space) | |
| 282 451 453 454 455 | |
| 5 725-5 830 | |
| RADIOLOCATION | |
| Amateur | |
| 150 453 455 | 5 725-5 850 |
| | RADIOLOCATION |
| | FIXED (Fixed Wireless Access links) |
| | (802.11b applications) |
| 5 830-5 850 | |
| RADIOLOCATION | |
| Amateur | |
| Amateur-satellite (space-to-Earth) | |
| 150 453 455 | |
| 5 850-5 925 | 5 850-6 700 |
| FIXED | FIXED |
| FIXED - SATELLITE(Earth-to-space) | FIXED -SATELLITE |
| MOBILE | MOBILE |
| Amateur | Amateur |
| Radiolocation | |
| .150 | |
| 5 925-6 700 | |
| FIXED | |
| FIXED -SATELLITE (Earth-to-space) 457A 457B | |
| MOBILE 149 440 458 | |
| 6 700-7 075 | 6 700-7 075 |
| FIXED | GMPCS (Space to Earth Communications) |
| FIXED - SATELLITE (Earth-to-space) (space-to-Earth) 441 | |
| MOBILE | |
| 458 458A 458B 458C | |
| 7 075-7 145 | 7 075-7 250 |
| FIXED | FIXED |
| MOBILE | MOBILE |

| | |
|---|----------------------------------|
| 458 459 | 458 459 |
| | |
| | |
| 7 145-7 235 | |
| FIXED | |
| MOBILE | |
| SPACE RESEARCH (Earth-to-space) 460 | |
| 458 459 | |
| 7 235-7 250 | |
| FIXED | |
| MOBILE | |
| 458 | |
| | |
| | |
| 7 250-8 500 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 7 250-7 300 | 7 250-7 300 |
| FIXED | FIXED -SATELLITE |
| FIXED -SATELLITE (space-to-Earth) | MOBILE |
| MOBILE 461 | 461 |
| 7 300-7 450 | 7 300-7 450 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| MOBILE except aeronautical mobile 461 | |
| 7 450-7 550 | 7 450-7 550 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| METEOROLOGICAL-SATELLITE (space-to-Earth) | METEOROLOGICAL-SATELLITE |
| MOBILE except aeronautical mobile 461A | MOBILE |
| 7 550-7 750 | 7 550-7 750 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| MOBILE except aeronautical mobile | METEOROLOGICAL-SATELLITE |
| 7 750-7 850 | 7 750-7 850 |
| FIXED | FIXED |
| METEOROLOGICAL-SATELLITE (space-to-Earth) 461B | METEOROLOGICAL-SATELLITE 461B |
| MOBILE except aeronautical mobile | |
| 7 850-7 900 | 7 850-7 900 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| 7 900-8 025 | 7 900-8 025 |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) | FIXED -SATELLITE |
| MOBILE 461 | MOBILE 461 |
| 8 025-8 175 | 8 025-8 175 |
| EARTH EXPLORATION-SATELLITE (space-to-Earth) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) | FIXED -SATELLITE |

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| MOBILE 463 462A | MOBILE 463 462A |
| 8 175-8 215 | 8 175-8 215 |
| EARTH EXPLORATION-SATELLITE (space-to-Earth) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) | FIXED -SATELLITE |
| METEOROLOGICAL-SATELLITE (Earth-to-space) | METEOROLOGICAL-SATELLITE |
| MOBILE 463 462A | |
| 8 215-8 400 | 8 215-8 400 |
| EARTH EXPLORATION-SATELLITE (space-to-Earth) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) | FIXED -SATELLITE |
| MOBILE 463 462A | MOBILE 463 462A |
| 8 400-8 500 | 8 400-8 500 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| SPACE RESEARCH (space-to-Earth) 465 466 | |
| | |
| | |
| 8 500-10 000 MHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 8 500-8 550 | 8 500-8 550 |
| RADIOLOCATION 468 469 | RADIOLOCATION 468 469 |
| 8 550-8 650 | 8 550-8 650 |
| EARTH EXPLORATION-SATELLITE (active) | EARTH EXPLORATION-SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| SPACE RESEARCH (active) 468 469 469A | SPACE RESEARCH 468 469 469A |
| 8 650-8 750 | 8 650-8 750 |
| RADIOLOCATION 468 469 | RADIOLOCATION 468 469 |
| 8 750-8 850 | 8 750-8 850 |
| RADIOLOCATION | RADIOLOCATION |
| AERONAUTICAL RADIONAVIGATION 470 471 | AERONAUTICAL RADIONAVIGATION 470 471 |
| 8 850-9 000 | 8 850-9 000 |
| RADIOLOCATION | RADIOLOCATION |
| MARITIME RADIONAVIGATION 472 473 | MARITIME RADIONAVIGATION 472 473 |
| 9 000-9 200 | 9 000-9 200 |
| AERONAUTICAL RADIONAVIGATION 337 | AERONAUTICAL RADIONAVIGATION RADIOLOCATION |
| Radiolocation 471 | 337 471 |
| 9 200-9 300 | 9 200-9 300 |
| RADIOLOCATION | RADIOLOCATION |
| MARITIME RADIONAVIGATION 472 473 474 | MARITIME RADIONAVIGATION 472 473 474 |
| 9 300-9 500 | 9 300-9 500 |
| RADIONAVIGATION 476 | RADIONAVIGATION 476 |
| Radiolocation 427 474 475 | Radiolocation 427 474 475 |
| 9 500-9 800 | 9 500-9 800 |
| EARTH EXPLORATION-SATELLITE (active) | EARTH EXPLORATION-SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| RADIONAVIGATION | RADIONAVIGATION |
| SPACE RESEARCH (active) 476A | SPACE RESEARCH 476A |
| 9 800-10 000 | 9 800-10 000 |

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|---|------------------------------------|
| RADIOLOCATION Fixed 477 478 479 | RADIOLOCATION Fixed 477 478 479 |
| | |
| 10-11.7 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 10-10.45 | 10-10.45 |
| RADIOLOCATION | RADIOLOCATION |
| Amateur 479 480 | Amateur 479 480 |
| 10.45-10.5 | 10.45-10.5 |
| RADIOLOCATION | Amateur |
| Amateur | Amateur-satellite 481 |
| Amateur-satellite 481 | |
| 10.5-10.55 | 10.5-10.55 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| RADIOLOCATION | RADIOLOCATION |
| 10.55-10.6 | 10.55-10.6 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile Radiolocation | MOBILE |
| | RADIOLOCATION |
| 10.6-10.68 | 10.6-10.68 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) | SPACE RESEARCH |
| Radiolocation 149 482 | RADIOLOCATION 149 482 |
| 10.68-10.7 | 10.68-10.7 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) 340 483 | SPACE RESEARCH 340 483 |
| 10.7-11.7 | 10.7-11.7 |
| FIXED | FIXED |
| FIXED - SATELLITE | FIXED - SATELLITE |
| (space-to-Earth) 441 484A | MOBILE 441 484A |
| MOBILE except aeronautical mobile | |
| | |
| 11.7-14 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 11.7-12.1 | 11.7-12.1 |
| FIXED 486 | FIXED 486 |
| FIXED - SATELLITE | FIXED - SATELLITE |
| (space-to-Earth) 484A | MOBILE |
| Mobile except aeronautical mobile 485 488 | |
| 12.1-12.2 | 12.1-12.2 |
| FIXED - SATELLITE | FIXED - SATELLITE |

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|---|--|
| (space-to-Earth) 484A 485 488 489 | |
| 12.2-12.7 | 12.2-12.7 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| BROADCASTING | BROADCASTING |
| BROADCASTING-SATELLITE 487A 488 490 492 | BROADCASTING-SATELLITE 487A 488 490 492 |
| 12.7-12.75 | 12.7-12.75 |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) | FIXED -SATELLITE |
| MOBILE except aeronautical mobile | MOBILE |
| 12.75-13.25 | 12.75-13.25 |
| FIXED | FIXED |
| FIXED -SATELLITE (Earth-to-space) 441 | FIXED -SATELLITE 441 |
| MOBILE | MOBILE |
| Space research (deep space) (space-to-Earth) | |
| 13.25-13.4 | 13.25-13.4 |
| EARTH EXPLORATION-SATELLITE (active) | EARTH EXPLORATION-SATELLITE |
| AERONAUTICAL RADIONAVIGATION 497 | AERONAUTICAL RADIONAVIGATION 497 |
| SPACE RESEARCH (active) 498A 499 | SPACE RESEARCH 498A 499 |
| 13.4-13.75 | 13.4-13.75 |
| EARTH EXPLORATION-SATELLITE (active) | EARTH EXPLORATION-SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| SPACE RESEARCH 501A | SPACE RESEARCH 501A |
| Standard frequency and time signal-satellite (Earth-to-space) | |
| 499 500 501 501B | |
| 13.75-14 | 13.75-14 484A |
| FIXED -SATELLITE (Earth-to-space) 484A | FIXED -SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| | |
| Standard frequency and time signal-satellite (Earth-to-space) | |
| Space research 499 500 501 502 503 | |
| | |
| | |
| 14-15.4 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 14-14.25 | 14-14.25 |
| FIXED -SATELLITE (Earth-to-space) 457A 457B 484A 506 506B | FIXED -SATELLITE 457A 457B 484A 506 506B |
| RADIONAVIGATION 504 | RADIONAVIGATION 504 |
| Mobile-satellite (Earth-to-space) 504C 506A | |
| Space research 504A 505 | |
| 14.25-14.3 | 14.25-14.3 |
| FIXED -SATELLITE (Earth-to-space) 457A 457B 484A 506 506B | FIXED -SATELLITE 457A 457B 484A 506 506B |
| RADIONAVIGATION 504 | RADIONAVIGATION 504 |
| MOBILE-SATELLITE 506A 508A | MOBILE-SATELLITE 506A 508A |
| Mobile-satellite (Earth-to-space) 506A 508A | SPACE RESEARCH 504A 505 508 509 |
| Space research 504A 505 508 509 | |

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| 14.3-14.4 FIXED -SATELLITE (Earth-to-space) 457A 484A 506 506B Mobile-satellite (Earth-to-space) 506A Radionavigation -satellite 504A | 14.3-14.4 FIXED -SATELLITE 457A 484A 506 506B MOBILE-SATELLITE 506A RADIONAVIGATION-SATELLITE 504A |
| 14.4-14.47 FIXED FIXED -SATELLITE (Earth-to-space) 457A 457B 484A 506 506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 506A 509A Space research (space-to-Earth) 504A | 14.4-14.47 FIXED FIXED -SATELLITE 457A 457B 484A 506 506B MOBILE MOBILE-SATELLITE 506A 509A SPACE RESEARCH 504A |
| 14.47-14.5 FIXED FIXED -SATELLITE (Earth-to-space) 457A 457B 484A 506 506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 504B 506A 509A Radio astronomy 149 504A | 14.47-14.5 FIXED FIXED -SATELLITE 457A 457B 484A 506 506B MOBILE MOBILE-SATELLITE RADIO ASTRONOMY 149 504A |
| 14.5-14.8 FIXED FIXED -SATELLITE (Earth-to-space) 510 MOBILE Space research | 14.5-14.8 FIXED FIXED -SATELLITE 510 MOBILE |
| 14.8-15.35 FIXED MOBILE Space research 339 | 14.8-15.35 FIXED MOBILE SPACE RESEARCH |
| 15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 340 511 | 15.35-15.4 EARTH EXPLORATION-SATELLITE RADIO ASTRONOMY SPACE RESEARCH 340 511 |
| 15.4-18.4 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 15.4-15.43 AERONAUTICAL RADIONAVIGATION 511D | 15.4-15.43 AERONAUTICAL RADIONAVIGATION 511D |
| 15.43-15.63 FIXED -SATELLITE (Earth-to-space) 511A AERONAUTICAL RADIONAVIGATION 511C | 15.43-15.63 FIXED -SATELLITE 511A AERONAUTICAL RADIONAVIGATION 511C |
| 15.63-15.7 AERONAUTICAL RADIONAVIGATION 511D | 15.63-15.7 AERONAUTICAL RADIONAVIGATION 511D |
| 15.7-16.6 RADIOLOCATION 512 513 | 15.7-16.6 RADIOLOCATION 512 513 |
| 16.6-17.1 RADIOLOCATION Space research (deep space) (Earth-to-space) 512 513 | 16.6-17.1 RADIOLOCATION SPACE RESEARCH 512 513 |
| 17.1-17.2 RADIOLOCATION 512 513 | 17.1-17.2 RADIOLOCATION 512 513 |

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| 17.2-17.3 EARTH EXPLORATION-SATELLITE (active) | 17.2-17.3 EARTH EXPLORATION-SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| SPACE RESEARCH (active) 512 513 513A | SPACE RESEARCH 512 513 513A |
| 17.3-17.7 | 17.3-17.7 |
| FIXED -SATELLITE (Earth-to-space) 516 | FIXED -SATELLITE 516 |
| BROADCASTING-SATELLITE | BROADCASTING-SATELLITE |
| Radiolocation 514 515 517 | RADIOLOCATION 514 515 517 |
| 17.7-17.8 | 17.7-17.8 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) (Earth-to-space) 516 | FIXED -SATELLITE |
| BROADCASTING-SATELLITE | BROADCASTING-SATELLITE |
| Mobile 518 515 517 | MOBILE 518 515 517 |
| 17.8-18.1 | 17.8-18.1 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) 484A (Earth-to-space) 516 | FIXED -SATELLITE 516 |
| MOBILE | MOBILE |
| 18.1-18.4 | 18.1-18.4 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) 484A 516B (Earth-to-space) 520 | FIXED -SATELLITE 484A 516B |
| MOBILE 519 521 | MOBILE 521 |
| | |
| | |
| 18.4-22 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 18.4-18.6 | 18.4-18.6 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) 484A 516B | FIXED -SATELLITE 484A 516B |
| MOBILE | MOBILE |
| 18.6-18.8 | 18.6-18.8 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) 516B 522B | FIXED -SATELLITE 516B 522B |
| MOBILE except aeronautical mobile | MOBILE |
| SPACE RESEARCH (passive) 522A | SPACE RESEARCH 522A |
| 18.8-19.3 | 18.8-19.3 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) 516.B 523A | FIXED -SATELLITE 516.B 523A |
| MOBILE | MOBILE |
| 19.3-19.7 | 19.3-19.7 |
| FIXED | FIXED |
| FIXED -SATELLITE (space-to-Earth) (Earth-to-space) 523B 523C 523D 523E | FIXED -SATELLITE 523B 523C 523D 523E |
| MOBILE | MOBILE |
| 19.7-20.1 | 19.7-20.1 |
| FIXED -SATELLITE (space-to-Earth) 484A 516B | FIXED -SATELLITE 484A 516B |
| MOBILE-SATELLITE (space-to-Earth) | MOBILE-SATELLITE |
| 524 525 526 527 528 529 | 524 525 526 527 528 529 |

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| 20.1-20.2 FIXED -SATELLITE (space-to-Earth) 484A 516B | 20.1-20.2 FIXED -SATELLITE) 484A 516B |
| MOBILE-SATELLITE (space-to-Earth) | MOBILE-SATELLITE |
| 524 525 526 .527 528 | 524 525 526 .527 528 |
| 20.2-21.2 | 20.2-21.2 |
| FIXED -SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| MOBILE-SATELLITE (space-to-Earth) | MOBILE-SATELLITE |
| Standard frequency and time signal-satellite (space-to-Earth) 524 | |
| 21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) | 21.2-21.4 EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| MOBILE | MOBILE |
| SPACE RESEARCH (passive) | SPACE RESEARCH |
| 21.4-22 | 21.4-22 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| | |
| | |
| 22-24.75 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 22-22.21 | 22-22.21 |
| FIXED | FIXED |
| MOBILE except aeronautical mobile 149 | MOBILE 149 |
| 22.21-22.5 | 22.21-22.5 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| MOBILE except aeronautical mobile | MOBILE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) 149 532 | SPACE RESEARCH 149 532 |
| 22.5-22.55 | 22.5-22.55 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 22.55-23.55 | 22.55-23.55 |
| FIXED | FIXED |
| INTER -SATELLITE | INTER -SATELLITE |
| MOBILE 149 | MOBILE 149 |
| 23.55-23.6 | 23.55-23.6 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| 23.6-24 | 23.6-24 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) 340 | SPACE RESEARCH 340 |
| 24-24.05 | 24-24.05 |
| AMATEUR | AMATEUR |
| AMATEUR-SATELLITE 150 | AMATEUR-SATELLITE 150 |
| 24.05-24.25 | 24.05-24.25 |
| RADIOLOCATION | RADIOLOCATION |
| Amateur | AMATEUR |

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| Earth exploration-satellite (active) 150 | |
| 24.25-24.45 | 24.25-24.45 |
| RADIONAVIGATION | RADIONAVIGATION |
| 24.45-24.65 | 24.45-24.65 |
| INTER - SATELLITE | INTER - SATELLITE |
| RADIONAVIGATION 533 | RADIONAVIGATION 533 |
| 24.65-24.75 | 24.65-24.75 |
| INTER - SATELLITE | INTER - SATELLITE |
| RADIOLOCATION - SATELLITE (Earth-to-space) | RADIOLOCATION - SATELLITE |
| | |
| | |
| 24.75-30.0 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 24.75-25.25 | 24.75-25.25 |
| FIXED - SATELLITE (Earth-to-space) 535 | FIXED - SATELLITE 535 |
| 25.25-25.5 | 25.25-25.5 |
| FIXED | FIXED |
| INTER - SATELLITE 536 | INTER - SATELLITE 536 |
| MOBILE Standard frequency and time signal-satellite (Earth-to-space) | MOBILE |
| 25.5-27 | 25.5-27 |
| EARTH EXPLORATION - SATELLITE (space-to Earth) | EARTH EXPLORATION - SATELLITE 536A 536B |
| 536A 536B | FIXED |
| FIXED | INTER - SATELLITE 536 |
| INTER - SATELLITE 536 | MOBILE |
| MOBILE | |
| SPACE RESEARCH (space-to-Earth) 536A 536C | |
| Standard frequency and time signal-satellite (Earth-to-space) | |
| 27-27.5 | 27-27.5 |
| FIXED | FIXED |
| FIXED - SATELLITE (Earth-to-space) | FIXED - SATELLITE |
| INTER - SATELLITE 536 537 | INTER - SATELLITE 536 537 |
| MOBILE | MOBILE |
| 27.5-28.5 | 27.5-28.5 |
| FIXED 537A | FIXED |
| FIXED - SATELLITE (Earth-to-space) 484A 516B 539 | FIXED - SATELLITE 484A 516B 539 |
| MOBILE 538 540 | MOBILE 538 540 |
| 28.5-29.1 | 28.5-29.1 |
| FIXED | FIXED |
| FIXED - SATELLITE (Earth-to-space) 484A 516B 523A 539 | FIXED - SATELLITE) 484A 516B 523A 539 |
| MOBILE | MOBILE |
| Earth exploration-satellite (Earth-to-space) 541 540 | |
| 29.1-29.5 | 29.1-29.5 |
| FIXED | FIXED |
| FIXED - SATELLITE (Earth-to-space) 516B 523C | FIXED - SATELLITE 516B 523C 523E 535A 539 541A |
| 523E 535A 539 541A | MOBILE |
| MOBILE | |
| Earth exploration-satellite (Earth-to-space) 541 540 | |
| 29.5-29.9 | 29.5-30.0 |

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|---|---------------------------------------|
| FIXED - SATELLITE (Earth-to-space) 484A 516B 539 | FIXED - SATELLITE MOBILE-SATELLITE |
| MOBILE-SATELLITE (Earth-to-space) | EARTH EXPLORATION-SATELLITE 541 |
| Earth exploration-satellite (Earth-to-space) 541 525 526 527 529 540 542 | 525 526 527 529 540 542 |
| | |
| | |
| 30.0.9-34.2 GHz | |
| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 30-31 | 30-31 |
| FIXED - SATELLITE (Earth-to-space) | FIXED - SATELLITE |
| MOBILE-SATELLITE (Earth-to-space) | MOBILE-SATELLITE |
| Standard frequency and time signal-satellite (space-to-Earth) 542 | |
| 31-31.3 | 31-31.3 |
| FIXED 543A | FIXED 543A |
| MOBILE | MOBILE |
| Standard frequency and time signal-satellite (space-to-Earth) | |
| Space research 544 545 149 | |
| 31.3-31.5 | 31.3-31.5 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) 340 | SPACE RESEARCH 340 |
| 31.5-31.8 | 31.5-31.8 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| RADIO ASTRONOMY | RADIO ASTRONOMY |
| SPACE RESEARCH (passive) | SPACE RESEARCH |
| 340 | 340 |
| 31.8-32 | 31.8-32 |
| FIXED 547A | FIXED 547A |
| RADIONAVIGATION | RADIONAVIGATION |
| SPACE RESEARCH (deep space) (space-to-Earth) | SPACE RESEARCH |
| 547 547B 548 | 547 547B 548 |
| 32-32.3 | 32-32.3 |
| FIXED 547A | FIXED 547A |
| RADIONAVIGATION | INTER - SATELLITE |
| SPACE RESEARCH (deep space) (space-to-Earth) | RADIONAVIGATION |
| 547 5.47C 548 | SPACE RESEARCH 547 5.47C 548 |
| 32.3-33 | 32.3-33 |
| FIXED 547A | FIXED 547A |
| INTER - SATELLITE | INTER - SATELLITE |
| RADIONAVIGATION 547 547D 548 | RADIONAVIGATION 547 547D 548 |
| 33-33.4 | 33-33.4 |
| FIXED 547A | FIXED 547A |
| RADIONAVIGATION 547 547E | RADIONAVIGATION 547 547E |
| 33.4-34.2 | 33.4-34.2 |
| RADIOLOCATION 549 | RADIOLOCATION 549 |
| | |
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| 34.2-40 GHz | |
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| Allocation to services | |
| ITU Region 2 | O.E.C.S |
| 34.2-34.7 | 34.2-34.7 |
| RADIOLOCATION | RADIOLOCATION |
| SPACE RESEARCH (deep space) (Earth-to-space) 549 | SPACE RESEARCH 549 |
| 34.7-35.2 | 34.7-35.2 |
| RADIOLOCATION | RADIOLOCATION |
| Space research 550 549 | SPACE RESEARCH 550 549 |
| 35.2-35.5 | 35.2-35.5 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AID S |
| RADIOLOCATION 549 | RADIOLOCATION 549 |
| 35.5-36 | 35.5-36 |
| METEOROLOGICAL AIDS | METEOROLOGICAL AIDS |
| EARTH EXPLORATION-SATELLITE (active) | EARTH EXPLORATION-SATELLITE |
| RADIOLOCATION | RADIOLOCATION |
| SPACE RESEARCH (active) 549 549A | SPACE RESEARCH 549 549A |
| 36-37 | 36-37 |
| EARTH EXPLORATION-SATELLITE (passive) | EARTH EXPLORATION-SATELLITE |
| FIXED | FIXED |
| MOBILE | MOBILE |
| SPACE RESEARCH (passive) 149 | SPACE RESEARCH 149 |
| 37-37.5 | 37-37.5 |
| FIXED | FIXED |
| MOBILE | MOBILE |
| SPACE RESEARCH (space-to-Earth) 547 | SPACE RESEA RCH 547 |
| 37.5-38 | 37.5-38 |
| FIXED | FIXED |
| FIXED - SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| MOBILE | MOBILE |
| SPACE RESEARCH (space-to-Earth) | SPACE RESEARCH |
| Earth exploration-satellite (space-to-Earth) 547 | |
| 38-39.5 | 38-39.5 |
| FIXED | FIXED |
| FIXED - SATELLITE (space-to-Earth) | FIXED -SATELLITE |
| MOBILE | MOBILE |
| Earth exploration-satellite (space-to-Earth) 547 | |
| 39.5-40 | 39.5-40 |
| FIXED | FIXED |
| FIXED - SATELLITE (space-to-Earth) 516B | FIXED -SATELLITE 516B |
| MOBILE | MOBILE |
| MOBILE-SATELLITE (space-to-Earth) | MOBILE-SATELLITE |
| Earth exploration-satellite (space-to-Earth) 547 | |
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| 40-47.5 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 40-40.5 | |
| EARTH EXPLORATION-SATELLITE (Earth-to-space) | |
| FIXED | |
| FIXED -SATELLITE (space-to-Earth) 516B | |
| MOBILE | |
| MOBILE-SATELLITE (space-to-Earth) | |
| SPACE RESEARCH (Earth-to-space) | |
| Earth exploration-satellite (space-to-Earth) | |
| 40.5-41 | |
| FIXED | |
| FIXED -SATELLITE (space-to-Earth) 516B | |
| BROADCASTING | |
| BROADCASTING-SATELLITE | |
| Mobile | |
| Mobile-satellite (space-to-Earth) | |
| 547 | |
| 41-42.5 | |
| FIXED | |
| FIXED -SATELLITE (space-to-Earth) 516B | |
| BROADCASTING | |
| BROADCASTING-SATELLITE | |
| Mobile | |
| 547 551F 551H 551I | |
| 42.5-43.5 | |
| FIXED | |
| FIXED-SATELLITE (Earth-to-space) 552 | |
| MOBILE except aeronautical mobile | |
| RADIO ASTRONOMY | |
| 149 547 | |
| 43.5-47 | |
| MOBILE 553 | |
| MOBILE-SATELLITE | |
| RADIONAVIGATION | |
| RADIONAVIGATION-SATELLITE | |
| 554 | |
| 47-47.2 | |
| AMATEUR | |
| AMATEUR-SATELLITE | |
| 47.2-47.5 | |
| FIXED | |
| FIXED-SATELLITE (Earth-to-space) 552 | |
| MOBILE | |
| 552A | |

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| 47.5-51.4 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 47.5-47.9 | |
| FIXED | |
| FIXED -SATELLITE | |
| (Earth-to-space) 552 | |
| (space-to-Earth) 516B 554A | |
| MOBILE | |
| 47.9-48.2 | |
| FIXED | |
| FIXED-SATELLITE (Earth-to-space) 552 | |
| MOBILE | |
| 552A | |
| 48.2-48.54 | |
| FIXED | |
| FIXED -SATELLITE | |
| (Earth-to-space) 552 | |
| (space-to-Earth) 516B | |
| 554A 555B | |
| MOBILE | |
| 48.54-49.44 | |
| FIXED | |
| FIXED -SATELLITE | |
| (Earth-to-space) 552 | |
| MOBILE | |
| 149 340 555 | |
| 49.44-50.2 | |
| FIXED | |
| FIXED -SATELLITE | |
| (Earth-to-space) 552 | |
| (space-to-Earth) 516B | |
| 554A 555B | |
| MOBILE | |
| 149 340 555 | |
| 50.2-50.4 | |
| EARTH EXPLORATION-SATELLITE (passive) | |
| SPACE RESEARCH (passive) | |
| 34 | |
| 50.4-51.4 | |
| FIXED | |
| FIXED -SATELLITE (Earth-to-space) | |
| MOBILE | |
| Mobile-satellite (Earth-to-space) | |
| | |

| 51.4-55.78 GHz | |
|---|-------------|
| Allocation to services | |
| ITU region 2 | OECS |
| 51.4-52.6 | |
| FIXED | |
| MOBILE | |
| 547 556 | |
| 52.6-54.25 | |
| EARTH EXPLORATION-SATELLITE (passive) | |
| SPACE RESEARCH (passive) | |
| 340 556 | |
| 54.25-55.78 | |
| EARTH EXPLORATION-SATELLITE (passive) | |
| INTER -SATELLITE 556A | |
| SPACE RESEARCH (passive) | |
| 556B | |
| | |
| | |
| 55.78-66 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) | |
| FIXED 557A | |
| INTER -SATELLITE 556A | |
| MOBILE 5.558 | |
| SPACE RESEARCH (passive) | |
| 547 557 | |
| 56.9-57 EARTH EXPLORATION-SATELLITE (passive) | |
| FIXED | |
| INTER -SATELLITE 558A | |
| MOBILE 558 | |
| SPACE RESEARCH (passive) | |
| 547 557 | |
| 57-58.2 EARTH EXPLORATION-SATELLITE (passive) | |
| FIXED | |
| INTER -SATELLITE 556A | |
| MOBILE 5.558 | |
| SPACE RESEARCH (passive) | |
| 547 557 | |
| 58.2-59 EARTH EXPLORATION-SATELLITE (passive) | |
| FIXED | |
| MOBILE | |
| SPACE RESEARCH (passive) | |
| 547 556 | |
| 59-59.3 EARTH EXPLORATION-SATELLITE (passive) | |
| FIXED | |
| INTER -SATELLITE 556A | |
| MOBILE 558 | |
| RADIOLOCATION 559 | |
| SPACE RESEARCH (passive) | |
| 59.3-64 FIXED | |

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| INTER -SATELLITE | |
| MOBILE 558 | |
| RADIOLOCATION 559 | |
| 138 | |
| 64-65 FIXED | |
| INTER -SATELLITE | |
| MOBILE except aeronautical mobile | |
| 547 556 | |
| 65-66 EARTH EXPLORATION-SATELLITE | |
| FIXED | |
| INTER -SATELLITE | |
| MOBILE except aeronautical mobile | |
| SPACE RESEARCH | |
| 547 | |
| | |
| | |
| 66-81 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 66-71 INTER -SATELLITE | |
| MOBILE 553 558 | |
| MOBILE-SATELLITE | |
| RADIONAVIGATION | |
| RADIONAVIGATION-SATELLITE | |
| 554 | |
| 71-74 FIXED | |
| FIXED -SATELLITE (space-to-Earth) | |
| MOBILE | |
| MOBILE-SATELLITE (space-to-Earth) | |
| 74-76 FIXED | |
| FIXED -SATELLITE (space-to-Earth) | |
| MOBILE | |
| BROADCASTING | |
| BROADCASTING-SATELLITE | |
| Space research (space-to-Earth) | |
| 559A 561 | |
| 76-77.5 RADIO ASTRONOMY | |
| RADIOLOCATION | |
| Amateur | |
| Amateur-satellite | |
| Space research (space-to-Earth) | |
| 149 | |
| 77.5-78 AMATEUR | |
| AMATEUR-SATELLITE | |
| Radio astronomy | |
| Space research (space-to-Earth) | |
| 149 | |
| 78-79 RADIOLOCATION | |
| Amateur | |
| Amateur-satellite | |
| Radio astronomy | |
| Space research (space-to-Earth) | |

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| 149 560 |
| 79-81 RADIO ASTRONOMY |
| RADIOLOCATION |
| Amateur |
| Amateur-satellite |
| Space research (space-to-Earth) |
| 149 |
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| |
| 81-86 GHz |
| |
| Allocation to services |
| ITU region 2 |
| OECS |
| 81-84 FIXED |
| FIXED-SATELLITE (Earth-to-space) |
| MOBILE |
| MOBILE-SATELLITE (Earth-to-space) |
| RADIO ASTRONOMY |
| Space research (space-to-Earth) |
| 149 561A |
| 84-86 FIXED |
| FIXED-SATELLITE (Earth-to-space) 5.561B |
| MOBILE |
| RADIO ASTRONOMY |
| 149 |
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| |
| 86-111.8 GHz |
| |
| Allocation to services |
| ITU region 2 |
| OECS |
| 86-92 EARTH EXPLORATION-SATELLITE (passive) |
| RADIO ASTRONOMY |
| SPACE RESEARCH (passive) |
| 34 |
| 92-94 FIXED |
| MOBILE |
| RADIO ASTRONOMY |
| RADIOLOCATION |
| 149 |
| 94-94.1 EARTH EXPLORATION-SATELLITE (active) |
| RADIOLOCATION |
| SPACE RESEARCH (active) |
| Radio astronomy |
| 562 562A |
| 94.1-95 FIXED |
| MOBILE |
| RADIO ASTRONOMY |
| RADIOLOCATION |
| 149 |

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| 95-100 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| RADIOLOCATION | |
| RADIONAVIGATION | |
| RADIONAVIGATION-SATELLITE | |
| 149 554 | |
| 100-102 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 340 341 | |
| 102-105 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| 149 341 | |
| 105-109.5 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) 5.562B | |
| 149 341 | |
| 109.5-111.8 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 340 341 | |
| | |
| | |
| 111.8-119.98 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 111.8-114.25 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) 562B | |
| 149 341 | |
| 114.25-116 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 340 341 | |
| 116-119.98 EARTH EXPLORATION-SATELLITE (passive) | |
| INTER-SATELLITE 5.562C | |
| SPACE RESEARCH (passive) | |
| 341 | |
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| | |
| 119.98-151.5 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 119.98-122.25 EARTH EXPLORATION-SATELLITE (passive) | |
| INTER-SATELLITE 562C | |
| SPACE RESEARCH (passive) | |
| 138 341 | |

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| 122.25-123 FIXED | |
| INTER-SATELLITE | |
| MOBILE 558 | |
| Amateur | |
| 138 | |
| 123-130 FIXED -SATELLITE (space-to-Earth) | |
| MOBILE-SATELLITE (space-to-Earth) | |
| RADIONAVIGATION | |
| RADIONAVIGATION-SATELLITE | |
| Radio astronomy 562D | |
| 149 554 | |
| 130-134 EARTH EXPLORATION-SATELLITE (active) 562E | |
| FIXED | |
| INTER-SATELLITE | |
| MOBILE 558 | |
| RADIO ASTRONOMY | |
| 149 562A | |
| 134-136 AMATEUR | |
| AMATEUR-SATELLITE | |
| Radio astronomy | |
| 136-141 RADIO ASTRONOMY | |
| RADIOLOCATION | |
| Amateur | |
| Amateur-satellite | |
| 149 | |
| 141-148.5 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| RADIOLOCATION | |
| 149 | |
| 148.5-151.5 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 34 | |
| | |
| 151.5-158.5 GHz | |
| | |
| Allocation to services | |
| ITU region 2 | OECS |
| 151.5-155.5 FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| RADIOLOCATION | |
| 149 | |
| 155.5-158.5 EARTH EXPLORATION-SATELLITE (passive) 562F | |
| FIXED | |
| MOBILE | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) 562B | |
| 149 562G | |
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| 158.5-202 GHz | |
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| Allocation to services | |
| ITU region 2 | OECS |
| 158.5-164 FIXED | |
| FIXED - SATELLITE (space-to-Earth) | |
| MOBILE | |
| MOBILE-SATELLITE (space-to-Earth) | |
| 164-167 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 34 | |
| 167-174.5 FIXED | |
| FIXED - SATELLITE (space-to-Earth) | |
| INTER -SATELLITE | |
| MOBILE 558 | |
| 149 562D | |
| 174.5-174.8 FIXED | |
| INTER -SATELLITE | |
| MOBILE 558 | |
| 174.8-182 EARTH EXPLORATION-SATELLITE (passive) | |
| INTER -SATELLITE 562H | |
| SPACE RESEARCH (passive) | |
| 182-185 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 34 | |
| 185-190 EARTH EXPLORATION-SATELLITE (passive) | |
| INTER -SATELLITE 562H | |
| SPACE RESEARCH (passive) | |
| 190-191.8 EARTH EXPLORATION-SATELLITE (passive) | |
| SPACE RESEARCH (passive) | |
| 34 | |
| 191.8-200 FIXED | |
| INTER -SATELLITE | |
| MOBILE 558 | |
| MOBILE-SATELLITE | |
| RADIONAVIGATION | |
| RADIONAVIGATION -SATELLITE | |
| 149 341 554 | |
| 200-202 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |
| SPACE RESEARCH (passive) | |
| 340 341 563A | |
| 202-248 GHz | |
| Allocation to services | |
| ITU region 2 | OECS |
| 202-209 EARTH EXPLORATION-SATELLITE (passive) | |
| RADIO ASTRONOMY | |

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| SPACE RESEARCH (passive) |
| 340 341 563A |
| 209-217 FIXED |
| FIXED - SATELLITE (Earth-to-space) |
| MOBILE |
| RADIO ASTRONOMY |
| 149 341 |
| 217-226 FIXED |
| FIXED - SATELLITE (Earth-to-space) |
| MOBILE |
| RADIO ASTRONOMY |
| SPACE RESEARCH (passive) 562B |
| 149 341 |
| 226-231.5 EARTH EXPLORATION-SATELLITE (passive) |
| RADIO ASTRONOMY |
| SPACE RESEARCH (passive) |
| 34 |
| 231.5-232 FIXED |
| MOBILE |
| Radiolocation |
| 232-235 FIXED |
| FIXED - SATELLITE (space-to-Earth) |
| MOBILE |
| Radiolocation |
| 235-238 EARTH EXPLORATION-SATELLITE (passive) |
| FIXED - SATELLITE (space-to-Earth) |
| SPACE RESEARCH (passive) |
| 563A 563B |
| 238-240 FIXED |
| FIXED - SATELLITE (space-to-Earth) |
| MOBILE |
| RADIOLOCATION |
| RADIONAVIGATION |
| RADIONAVIGATION-SATELLITE |
| 240-241 FIXED |
| MOBILE |
| RADIOLOCATION |
| 241-248 RADIO ASTRONOMY |
| RADIOLOCATION |
| Amateur |
| Amateur-satellite |
| 138 149 |
| |
| |
| 248-1 000 GHz |
| |
| Allocation to services |
| ITU region 2 |
| OECS |
| 248-250 AMATEUR |
| AMATEUR-SATELLITE |
| Radio astronomy |
| 149 |
| 250-252 EARTH EXPLORATION-SATELLITE (passive) |

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| RADIO ASTRONOMY |
| SPACE RESEARCH (passive) |
| 340 563A |
| 252-265 FIXED |
| MOBILE |
| MOBILE-SATELLITE (Earth-to-space) |
| RADIO ASTRONOMY |
| RADIONAVIGATION |
| RADIONAVIGATION-SATELLITE |
| 149 554 |
| 265-275 FIXED |
| FIXED-SATELLITE (Earth-to-space) |
| MOBILE |
| RADIO ASTRONOMY |
| 149 563A |
| 275-1 000 (Not allocated) 565 |
| |
| |
| |

FOOT NOTES APPLICABLE TO REGION 2

53 Administrations authorizing the use of frequencies below 9 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated.

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

55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-03)

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.

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)

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.

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.

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.

63 (SUP - WRC-97)

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.

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.

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.

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.

83 The frequency 500 kHz is an international distress and calling frequency for Morse radiotelegraphy. The conditions for its use are prescribed in Articles **31** and **52**, and in Appendix **13**.

84 The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **31** and **52** and in Appendix **13**. (WRC-97)

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.

89 In Region 2, the use of the band 1605-1705 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 1625-1705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).

90 In the band 1605-1705 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.

102 Alternative allocation: in Argentina, Bolivia, Chile, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 1850-2000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis.

106 In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2065 kHz and 2107 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.

108 The carrier frequency 2182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2190.5 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.

109 The frequencies 2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 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**.

110 The frequencies 2174.5 kHz, 4177.5 kHz, 6268 kHz, 8376.5 kHz, 12520 kHz and 16695 kHz are international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article **31**.

111 The carrier frequencies 2182 kHz, 3 023 kHz, 5680 kHz, 8364 kHz and the frequencies 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31** and in Appendix **13**.

The same applies to the frequencies 10003 kHz, 14 993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

112 Alternative allocation: in Bosnia and Herzegovina, Denmark, Malta, Serbia and Montenegro, and Sri Lanka, the band 2194-2300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03)

113 For the conditions for the use of the bands 2 300-2 495 kHz (2 498 kHz in Region 1), 3200-3400 kHz, 4750-4995 kHz and 5005-5 060 kHz by the broadcasting service, see Nos. **5.16** to **5.20**, **5.21** and **23.3** to **23.10**.

115 The carrier (reference) frequencies 3023 kHz and 5680 kHz may also be used, in accordance with Article **31** and Appendix **13** by stations of the maritime mobile service engaged in coordinated search and rescue operations.

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.

117 Alternative allocation: in Bosnia and Herzegovina, Côte d'Ivoire, Denmark, Egypt, Liberia, Malta, Serbia and Montenegro, 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-03)

118 Additional allocation: in the United States, Mexico, Peru and Uruguay, the band 3230-3400 kHz is also allocated to the radiolocation service on a secondary basis. (WRC-03)

119 Additional allocation: in Honduras, Mexico, Peru and Venezuela, the band 3500-3750 kHz is also allocated to the fixed and mobile services on a primary basis.

122 Alternative allocation: in Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3750-4000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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**.

125 Additional allocation: in Greenland, the band 3950-4 000 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.

126 In Region 3, the stations of those services to which the band 3995-4005 kHz is allocated may transmit standard frequency and time signals.

128 In Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service. (WRC-97)

130 The conditions for the use of the carrier frequencies 4125 kHz and 6215 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.

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**).

137 On condition that harmful interference is not caused to the maritime mobile service, the bands 6200-6213.5 kHz and 6220.5-6 525 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.

138 The following bands:

| | |
|-------------------|--|
| 6765-6795 kHz | (centre frequency 6780 kHz), |
| 433.05-434.79 MHz | (centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. 5.280 , |
| 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.

138A Until 29 March 2009, the band 6765-7000 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. After this date, this band is allocated to the fixed and the mobile except aeronautical mobile (R) services on a primary basis. (WRC-03)

139 Different category of service: until 29 March 2009, in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6765-7 000 kHz to the land mobile service is on a primary basis (see No. **5.33**). (WRC-03)

140 Additional allocation: in Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000-7 050 kHz is also allocated to the fixed service on a primary basis. (WRC-03)

141 Alternative allocation: in Egypt, Eritrea, Ethiopia, Guinea, the Libyan Arab Jamahiriya and Madagascar, the band 7 000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-97)

141A Additional allocation: in Uzbekistan and Kyrgyzstan, the bands 7000-7 100 kHz and 7 100-7 200 kHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-03)

142 Until 29 March 2009, the use of the band 7100-7 300 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. After 29 March 2009 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-03)

143 The band 7 300-7 350 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis and to the land mobile service on a secondary basis, subject to application of the procedure referred to in Resolution **21 (Rev.WRC-95)***. After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned 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. 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.

143A In Region 3, the band 7350-7450 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the above-mentioned 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. 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-03)

143B In Region 1, the band 7350-7450 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, on condition that harmful interference is not caused to the broadcasting service, frequencies in the band 7350-7450 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, each station using a total radiated power that shall not exceed 24 dBW. (WRC-03)

143C Additional allocation: after 29 March 2009 in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, the bands 7350-7400 kHz and 7400-7450 kHz are also allocated to the fixed service on a primary basis. (WRC-03)

143D In Region 2, the band 7350-7400 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the above-mentioned 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. 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-03)

143E Until 29 March 2009, the band 7450-8100 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. (WRC-03)

144 In Region 3, the stations of those services to which the band 7995-8005 kHz is allocated may transmit standard frequency and time signals.

145 The conditions for the use of the carrier frequencies 8291 kHz, 12 290 kHz and 16420 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.

146 The bands 9400-9500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17480-17 550 kHz and 18 900-19 020 kHz are allocated to the fixed service on a primary basis until 1 April 2007, subject to application of the procedure referred to in Resolution **21 (Rev.WRC-95)***. After 1 April 2007, frequencies in these bands 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.

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

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

147 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9775-9900 kHz, 11 650-11700 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.

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

| | |
|-----------------------------------|--------------------|
| 13 360-13 410 kHz, | 92-94 GHz, |
| 25 550-25 670 kHz, | 94.1-100 GHz, |
| 37.5-38.25 MHz, | 102-109.5 GHz, |
| 73-74.6 MHz in Regions 1 and 3, | 111.8-114.25 GHz, |
| 150.05-153 MHz in Region 1, | 128.33-128.59 GHz, |
| 322-328.6 MHz, | |
| 406.1-410 MHz, | 129.23-129.49 GHz, |
| 608-614 MHz in Regions 1 and 3, | 130-134 GHz, |
| 1 330-1 400 MHz, | 136-148.5 GHz, |
| 1 610.6-1 613.8 MHz, | 151.5-158.5 GHz, |
| 1 660-1 670 MHz, | 168.59-168.93 GHz, |
| 1 718.8-1 722.2 MHz, | 171.11-171.45 GHz, |
| 2 655-2 690 MHz, | 172.31-172.65 GHz, |
| 3 260-3 267 MHz, | 173.52-173.85 GHz, |
| 3 332-3 339 MHz, | 195.75-196.15 GHz, |
| 3 345.8-3 352.5 MHz, | 209-226 GHz, |
| 4 825-4 835 MHz, | 241-250 GHz, |
| 4 950-4 990 MHz, | 252-275 GHz |
| 4 990-5 000 MHz, | |
| 6 650-6 675.2 MHz, | |
| 10.6-10.68 GHz, | |
| 14.47-14.5 GHz, | |
| 22.01-22.21 GHz, | |
| 22.21-22.5 GHz, | |
| 22.81-22.86 GHz, | |
| 23.07-23.12 GHz, | |
| 31.2-31.3 GHz, | |
| 31.5-31.8 GHz in Regions 1 and 3, | |
| 36.43-36.5 GHz, | |
| 42.5-43.5 GHz, | |
| 42.77-42.87 GHz, | |
| 43.07-43.17 GHz, | |
| 43.37-43.47 GHz, | |
| 48.94-49.04 GHz, | |
| 76-86 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-2000)

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), |
| 2400-2500 MHz | (centre frequency 2450 MHz), |
| 5725-5875 MHz | (centre frequency 5800 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.

151 The bands 13 570-13 600 kHz and 13 800-13 870 kHz are allocated, until 1 April 2007, to the fixed service on a primary basis and to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred

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)

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)

155 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis. (WRC-03)

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.

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

160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-2000)

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.

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

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, Moldova, Monaco, Norway, the Netherlands, Poland, Portugal, Slovakia, the Czech Rep., the United Kingdom, 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-2000)

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

167 *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Indonesia, Iran (Islamic Republic of), Malaysia, Pakistan, Singapore and Thailand, the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis.

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.

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

172 *Different category of service:* in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 54-68 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

173 *Different category of service:* in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 68-72 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

178 *Additional allocation:* in Colombia, Costa Rica, 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.

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)

185 *Different category of service:* in the United States, the French Overseas Departments in Region 2, Guyana, Jamaica, Mexico and Paraguay, the allocation of the band 76-88 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

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)

194 *Additional allocation:* in Azerbaijan, Lebanon, the Syrian Arab Republic, 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-97)

197 *Additional allocation:* in Japan, Pakistan and 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-2000)

197A The band 108-117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis, limited to systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international aviation standards. Such use shall be in accordance with Resolution **413 (WRC-03)** and shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service which operate in accordance with international aeronautical standards. (WRC-03)

198 *Additional allocation:* the band 117.975-136 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis, subject to agreement obtained under No. **9.21**. (WRC-97)

199 The bands 121.45-121.55 MHz and 242.95-243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radiobeacons transmitting at 121.5 MHz and 243 MHz (see Appendix **13**).

200 In the band 117.975-136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article **31** and Appendix **13** for distress and safety purposes with stations of the aeronautical mobile service.

201 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Latvia, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the 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-97)

202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Latvia, Moldova, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the 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-2000)

203 In the band 136-137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. **4.4** with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological-satellite service. (WRC-97)

203A *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005. (WRC-97)

203B *Additional allocation:* in Saudi Arabia, United Arab Emirates, Oman and Syrian Arab Republic, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis until 1 January 2005. (WRC-03)

204 *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Malaysia, Oman, Pakistan, the Philippines, Qatar, Serbia and Montenegro, 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-03)

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**).

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)

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.

208 The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-97)

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 Table 1 of Recommendation ITU-R RA.769-1. (WRC-97)

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)

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.

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.

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.

220 The use of the 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**. The mobile-satellite service shall not constrain the development

and use of the radionavigation-satellite service in the bands 149.9-150.05 MHz and 399.9-400.05 MHz. (WRC-97)

221 Stations of the mobile-satellite service in the 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, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, the Libyan Arab Jamahiriya, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, 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, Slovakia, Romania, the United Kingdom, Senegal, Serbia and Montenegro, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe. (WRC-03)

224 (SUP - WRC-97)

224A The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service (Earth-to-space) is limited to the land mobile-satellite service (Earth-to-space) until 1 January 2015. (WRC-97)

224B The allocation of the bands 149.9-150.05 MHz and 399.9-400.05 MHz to the radionavigation-satellite service shall be effective until 1 January 2015. (WRC-97)

226 The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article **31** and Appendix **13**.

In the bands 156-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **13**).

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 radio-communication service.

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

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**.

231 *Additional allocation:* in Afghanistan, China and Pakistan, the band 167-174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected.

232 *Additional allocation:* in Japan, the band 170-174 MHz is also allocated to the broadcasting service on a primary basis.

234 *Different category of service:* in Mexico, the allocation of the band 174-216 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

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.

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

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**.

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)

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**.

256 The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes (see Appendix **13**).

256A *Additional allocation:* in China, the Russian Federation, Kazakhstan and Ukraine, the 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, nor claim protection from, nor constrain the use and development of the mobile service systems and mobile-satellite service systems operating in the 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-03)

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**.

260 Recognizing that the use of the band 399.9-400.05 MHz by the fixed and mobile services may cause harmful interference to the radionavigation satellite service, administrations are urged not to authorize such use in application of No. **4.4**.

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

262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Botswana, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Romania, Serbia and Montenegro, Singapore, Somalia, Tajikistan, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

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.

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.

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** and Appendix **13**).

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

268 Use of the band 410-420 MHz by the space research service is limited to communications within 5km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed $-153 \text{ dB(W/m}^2\text{)}$ for $0^\circ \leq \delta \leq 5^\circ$, $-153 + 0.077 (\delta - 5) \text{ dB(W/m}^2\text{)}$ for $5^\circ \leq \delta \leq 70^\circ$ and $-148 \text{ dB(W/m}^2\text{)}$ for $70^\circ \leq \delta \leq 90^\circ$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. (WRC-97)

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**).

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.

271 *Additional allocation:* in Azerbaijan, Belarus, China, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-03)

276 *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Burundi, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Liechtenstein, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Switzerland, Tanzania, Thailand, Togo, Turkey and Yemen, the band 430-440 MHz is also allocated to the fixed service on a primary basis and the bands 430-435 MHz and 438-440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-97)

277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

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**).

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**.

281 *Additional allocation:* in the French Overseas Departments in Region 2 and India, the band 433.75-434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.

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

284 *Additional allocation:* in Canada, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.

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**).

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. **6.21**.

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)

286B The use of the band 454-455 MHz in the countries listed in No. **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. **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)

286C The use of the band 454-455 MHz in the countries listed in No. **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. **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)

286D *Additional allocation:* in Canada, the United States, Mexico and Panama, the band 454-455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (WRC-97)

287 In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174 (see Resolution **341 (WRC-97)***). (WRC-97)

288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-1. (WRC-03)

289 Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz and 1690-1710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table.

290 *Different category of service:* in Afghanistan, Azerbaijan, Belarus, China, the Russian Federation, Japan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 460-470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **6.21**. (WRC-2000)

292 *Different category of service:* in Mexico and Venezuela, the allocation of the band 470-512 MHz to the fixed and mobile services, and in Argentina and Uruguay to the mobile service, is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **6.21**.

293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **6.21**. In Argentina and Ecuador, the allocation of the 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. **6.21**. (WRC-2000)

297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **6.21**. (WRC-2000)

309 *Different category of service:* in Costa Rica, El Salvador and Honduras, the allocation of the band 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **6.21**.

311 Within the frequency band 620-790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33 (Rev.WRC-03)** and **507 (Rev.WRC-03)**). Such stations shall not produce a power flux-density in excess of the value -129 dB(W/m²) for angles of arrival less than 20° (see Recommendation **705**) within the territories of other countries without the consent of the administrations of those countries. Resolution **545 (WRC-03)** applies. (WRC-03)

317 *Additional allocation:* in Region 2 (except Brazil and the United States), the 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.

317A Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **224 (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-2000)

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.

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**.

325A *Different category of service:* in Cuba, the allocation of the band 902-915 MHz to the land mobile service is on a primary basis. (WRC-2000)

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**.

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)

328A Stations in the radionavigation-satellite service in the band 1164-1215 MHz shall operate in accordance with the provisions of Resolution **609 (WRC-03)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (WRC-03)

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. (WRC-03)

329 Use of the radionavigation-satellite service in the band 1215-1 300 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. **331**. Furthermore, the use of the radionavigation-satellite service in the band 1215-1 300 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)

329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1215-1300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table. (WRC-2000)

330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lebanon, Mozambique, Nepal, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1215-1 300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

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, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the United Kingdom, Serbia and Montenegro, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1215-1 300 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-03)

332 In the band 1215-1 260 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigation-satellite service and other services allocated on a primary basis. (WRC-2000)

335 In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection

from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service. (WRC-97)

335A In the band 1260-1300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service and other services allocated by footnotes on a primary basis. (WRC-2000)

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

337A The use of the band 1300-1350 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)

339 The bands 1370-1400 MHz, 2640-2655 MHz, 4950-4990 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.

339A *Additional allocation:* the band 1390-1392 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a secondary basis and the band 1430-1432 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis. These allocations are limited to use for feeder links for non-geostationary-satellite networks in the mobile-satellite service with service links below 1 GHz, and Resolution **745 (WRC-03)** applies. (WRC-03)

340 All emissions are prohibited in the following bands:

1400-1427 MHz,
2690-2700 MHz, except those provided for by No.**422**,
10.68-10.7 GHz, except those provided for by No.**483**,
15.35-15.4 GHz, except those provided for by No.**511**,
23.6-24 GHz,
31.3-31.5 GHz,
31.5-31.8 GHz, in Region 2,
48.94-49.04 GHz, from airborne stations
50.2-50.4 GHz²,
52.6-54.25 GHz,
86-92 GHz,
100-102 GHz,
109.5-111.8 GHz,
114.25-116 GHz,
148.5-151.5 GHz,
164-167 GHz,
182-185 GHz,
190-191.8 GHz,
200-209 GHz,
226-231.5 GHz,
250-252 GHz. (WRC-03)

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

343 In Region 2, the use of the band 1435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

344 *Alternative allocation:* in the United States, the band 1452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **343**).

345 Use of the band 1452-1492 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)***.

347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Mozambique, Portugal, Serbia and Montenegro, Sri Lanka, Swaziland, Yemen and Zimbabwe, the allocation of the band 1452-1 492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007. (WRC-03)

347A In the bands:
1452-1492 MHz,
1525-1559 MHz,
1613,8-1626,5 MHz,
2655-2670 MHz,
2670-2690 MHz,
21.4-22 GHz,

Resolution **739 (WRC-03)** applies. (WRC-03)

348 The use of the band 1518-1525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. **43A** does not apply. (WRC-03)

348A In the band 1518-1 525 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 $-150 \text{ dB(W/m}^2\text{)}$ in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix **5**. In the band 1518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **43A** does not apply. (WRC-03)

348B In the band 1518-1525 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. **343** and **344**) and in the countries listed in No. **342**. No. **43A** does not apply. (WRC-03)

348C For the use of the bands 1518-1 525 MHz and 1668-1 675 MHz by the mobile-satellite service, see Resolution **225 (Rev.WRC-03)**. (WRC-03)

351 The bands 1525-1 544 MHz, 1545-1 559 MHz, 1626.5-1 645.5 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.

351A For the use of the bands 1525-1 544 MHz, 1545-1559 MHz, 1610-1 626.5 MHz, 1626.5-1 645.5 MHz, 1646.5-1 660.5 MHz, 1980-2 010 MHz, 2170-2200 MHz, 2483.5-2 500 MHz, 2500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **225 (WRC-2000)***. (WRC-2000)

353 (SUP - WRC-97)

353A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1530-1 544 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)

354 The use of the bands 1525-1 559 MHz and 1626.5-1 660.5 MHz by the mobile-satellite services is subject to coordination under No. **9.11A**.

355 *Additional allocation:* in Bahrain, Bangladesh, Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Kuwait, Lebanon, Malta, Qatar, Syrian Arab Republic, Somalia, 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-03)

356 The use of the band 1544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article **31**).

357 Transmissions in the band 1545-1 555 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.

357A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the 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 (WRC-2000)** shall apply.) (WRC-2000)

359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, the Libyan Arab Jamahiriya, Jordan, Kazakhstan, Kuwait, Lebanon, Lithuania, Mauritania, Moldova, Mongolia, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the 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 bands. (WRC-03)

362A In the United States, in the bands 1555-1559 MHz and 1656.5-1660.5 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)

362B *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakhstan, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Mali, Mauritania, the Syrian Arab Republic and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-03)

362C *Additional allocation:* in Bahrain, Bangladesh, Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, the Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-2000)

363 *Alternative allocation:* in Sweden, the band 1 590-1 626.5 MHz is allocated to the aeronautical radionavigation service on a primary basis.

364 The use of the band 1610-1 626.5 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. **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. **366** and stations in the fixed service operating in accordance with the provisions of No. **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. **366**.

366 The band 1610-1 626.5 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**.

368 With respect to the radiodetermination-satellite and mobile-satellite services the provisions of No. **4.10** do not apply in the band 1610-1 626.5 MHz, with the exception of the aeronautical radionavigation-satellite service.

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.

372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. **29.13** applies).

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. **359**. (WRC-97)

375 The use of the band 1645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress and safety communications (see Article **31**).

376 Transmissions in the band 1646.5-1 656.5 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.

2007, frequencies in these bands may be used by stations in the above-mentioned services, 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.

376A Mobile earth stations operating in the band 1660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. (WRC-97)

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.

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.

379B The use of the band 1668-1675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (WRC-03)

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/m²) in 10 MHz and -194 dB(W/m²) 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)

379D For sharing of the band 1668-1 675 MHz between the mobile-satellite service and the fixed, mobile and space research (passive) services, Resolution **744 (WRC-03)** shall apply. (WRC-03)

379E In the band 1668.4-1 675 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 1668.4-1 675 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)

380 The bands 1670-1 675 MHz and 1800-1 805 MHz are intended for use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The use of the band

1670-1675 MHz by stations in the systems for public correspondence with aircraft is limited to transmissions from aeronautical stations and the use of the band 1800-1805 MHz is limited to transmissions from aircraft stations.

380A In the band 1670-1675 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 in accordance with Resolution **670 (WRC-03)**. (WRC-03)

381 *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, Iran (Islamic Republic of) and Pakistan, the band 1690-1700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-03).

384 *Additional allocation:* in India, Indonesia and Japan, the band 1700-1710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis. (WRC-97)

384A The bands, or portions of the bands, 1710-1885 MHz and 2500-2690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution 223 (WRC-2000). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations (WRC-2000).

385 *Additional allocation:* the band 1718.8-1722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. (WRC-2000)

386 *Additional allocation:* the band 1750-1850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, 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-03)

387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, the band 1770-1790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-03)

388 The bands 1885-2025 MHz and 2110-2200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**. (See also Resolution **223 (WRC-2000)**.) (WRC-2000)

388A In Regions 1 and 3, the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz and, in Region 2, the bands 1885-1980 MHz and 2110-2160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution **221 (Rev.WRC-03)**. Their use by IMT-2000 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-03)

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, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT-2000 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-03)

389 Not used.

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 (WRC-95)***. The use of these bands shall not commence before 1 January 2000; however the use of the band 1 980-1 990 MHz in Region 2 shall not commence before 1 January 2005.

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.

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 shall not commence before 1 January 2002 and is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)***. (WRC-97)

389D (SUP - WRC-03)

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.

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)

390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, the use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite services shall not cause harmful interference to stations in the fixed and mobile services before 1 January 2005. After this date, the use of these bands is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)***. (WRC-2000)

391 In making assignments to the mobile service in the 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, and shall take that Recommendation into account for the introduction of any other type of mobile system. (WRC-97)

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.

392A *Additional allocation:* in the Russian Federation, the band 2 160-2 200 MHz is also allocated to the space research service (space-to-Earth) on a primary basis until 1 January 2005. Stations in the space

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services operating in this frequency band.

393 *Additional allocation:* in the United States, India and Mexico, the 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 (WARC-92)*, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. (WRC-2000)

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 2300-2483.5 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

396 Space stations of the broadcasting-satellite service in the band 2 310-2 360 MHz operating in accordance with No. **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.

402 The use of the band 2483.5-2500 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 2483.5-2500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4990-5000 MHz band allocated to the radio astronomy service worldwide.

409 Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2 500-2 690 MHz.

411 When planning new tropospheric scatter radio-relay links in the band 2500-2 690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.

414 The allocation of the frequency band 2500-2 520 MHz to the mobile-satellite service (space-to-Earth) shall be effective on 1 January 2005 and is subject to coordination under No. **9.11A**.

415 The use of the bands 2500-2690 MHz in Region 2 and 2500-2 535 MHz and 2655-2690 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. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Article **21**, Table **21-4**.

415A *Additional allocation:* in India and Japan, subject to agreement obtained under No. **9.21**, the band 2515-2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries. (WRC-2000)

416 The use of the band 2520-2670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. (WRC-03)

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

417A In applying provision No. **418**, in Korea (Rep. of) and Japan, *resolves* 3 of Resolution **528 (Rev.WRC-03)** is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial broadcasting service to additionally operate on a primary basis in the band 2605-2630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **416**. The provisions of No. **416** and Table **21-4** of Article **21** do not apply. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) in the band 2605-2630 MHz is subject to the provisions of Resolution **539 (Rev.WRC-03)**. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2605-2630 MHz for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

$$\begin{array}{ll}
 -130 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 0^\circ \leq \theta \leq 5^\circ \\
 -130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 5^\circ < \theta \leq 25^\circ \\
 -122 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 25^\circ < \theta \leq 90^\circ
 \end{array}$$

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. In the case of the broadcasting-satellite service (sound) networks of Korea (Rep. of), as an exception to the limits above, the power flux-density value of $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ shall be used as a threshold for coordination under No. **9.11** in an area of 1000 km around the territory of the administration notifying the broadcasting-satellite service (sound) system, for angles of arrival greater than 35° . (WRC-03)

417B In Korea (Rep. of) and Japan, use of the band 2605-2630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, 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 4 July 2003, 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 5 July 2003. (WRC-03)

417C Use of the band 2605-2630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12**. (WRC-03)

417D Use of the band 2605-2630 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003 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. **417A**, and No. **22.2** does not apply. (WRC-03)

418 *Additional allocation:* in Korea (Rep. of), India, Japan, Pakistan and Thailand, the band 2535-2655 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-03)**. The provisions of No. **416** and Table **21-4** of

Article **21**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **539 (Rev.WRC-03)**. Geostationary broadcasting-satellite 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 flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the 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:

$$\begin{array}{ll}
 -130 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 0^\circ \leq \theta \leq 5^\circ \\
 -130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 5^\circ < \theta \leq 25^\circ \\
 -122 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 25^\circ < \theta \leq 90^\circ
 \end{array}$$

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 $-122 \text{ dB (W/(m}^2 \cdot \text{MHz))}$ shall be used as a threshold for coordination under No. **9.11** in an area of 1500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, the power flux-density value shall not exceed $-100 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ anywhere on the territory of the Russian Federation.

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. **416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. (WRC-03)

418A In certain Region 3 countries listed in No. **418**, use of the band 2630-2655 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)

418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **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)

418C Use of the band 2630-2655 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. **418** and No. **22.2** does not apply. (WRC-03)

419 The allocation of the frequency band 2 670-2 690 MHz to the mobile-satellite service shall be effective from 1 January 2005. When introducing systems of the mobile-satellite service in this band, 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**.

420 The band 2 655-2 670 MHz (until 1 January 2005 the band 2 655-2 690 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.

420A *Additional allocation:* in India and Japan, subject to agreement obtained under No. **9.21**, the band 2670-2 690 MHz may also be used for the aeronautical mobile-satellite service (Earth-to-space) for operation limited to within their national boundaries. (WRC-2000)

422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Serbia and Montenegro, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2690-2700 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-03)

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

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

424A In the band 2900-3100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)

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

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

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

428 *Additional allocation:* in Azerbaijan, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3100-3300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

430 *Additional allocation:* in Azerbaijan, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3300-3400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

432 *Different category of service:* in Korea (Rep. of), Japan and Pakistan, the allocation of the band 3400-3500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-2000)

433 In Regions 2 and 3, in the band 3400-3600 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.

435 In Japan, in the band 3620-3700 MHz, the radiolocation service is excluded.

438 Use of the band 4200-4400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the

ground. However, passive sensing in the Earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).

440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4202 MHz for space-to-Earth transmissions and the frequency 6427 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**.

441 The use of the bands 4500-4 800 MHz (space-to-Earth), 6725-7 025 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. **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)

443 *Different category of service:* in Argentina, Australia and Canada, the allocation of the bands 4825-4835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. **5.33**).

443A (SUP - WRC-03)

443B In order not to cause harmful interference to the microwave landing system operating above 5030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5010-5030 MHz shall not exceed -124.5 dB (W/m²) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4990-5 000 MHz, radionavigation-satellite service systems operating in the band 5 010-5 030 MHz shall comply with the limits in the band 4 990-5 000 MHz defined in Resolution **741 (WRC-03)**. (WRC-03)

444 The band 5030-5150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **444A** and Resolution **114 (Rev.WRC-03)** apply. (WRC-03)

444A *Additional allocation:* the band 5091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev.WRC-03)**;
- prior to 1 January 2018, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5000-5091 MHz band, shall take precedence over other uses of this band;

- after 1 January 2012, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-03)

447 *Additional allocation:* in Israel, Lebanon, Pakistan, 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 (WRC-03)** do not apply. (WRC-03)

447A The allocation to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

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 $-164 \text{ dB(W/m}^2\text{)}$ in any 4 kHz band for all angles of arrival.

447C Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 MHz operated under Nos. **447A** and **447B** shall coordinate on an equal basis in accordance with No. **9.11A** with administrations responsible for non-geostationary-satellite networks operated under No. **446** and brought into use prior to 17 November 1995. Satellite networks operated under No. **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. **447A** and **447B**.

447D The allocation of the band 5 250-5 255 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)

447E *Additional allocation:* The 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, Sri Lanka, Thailand and Viet Nam. The use of this band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613. 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. **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-03)

447F In the 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 and ITU-R SA.1632. (WRC-03)

448 *Additional allocation:* in Azerbaijan, Libyan Arab Jamahiriya, Mongolia, Kyrgyzstan, Slovakia, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

448A The Earth exploration-satellite (active) and space research (active) services in the frequency band 5250-5350 MHz shall not claim protection from the radiolocation service. No. **5.43A** does not apply. (WRC-03)

448B The Earth exploration-satellite service (active) operating in the band 5350-5570 MHz and space research service (active) operating in the band 5460-5570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5350-5460 MHz, the radionavigation service in the band 5460-5470 MHz and the maritime radionavigation service in the band 5470-5570 MHz. (WRC-03)

448C The space research service (active) operating in the band 5350-5460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. (WRC-03)

448D In the frequency band 5350-5470 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. **449**. (WRC-03)

449 The use of the band 5350-5470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

450 *Additional allocation:* in Austria, Azerbaijan, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 5470-5650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-03)

450A In the band 5470-5725 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. (WRC-03)

450B In the frequency band 5470-5650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5600-5650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. (WRC-03)

451 *Additional allocation:* in the United Kingdom, the band 5470-5850 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 5725-5850 MHz.

452 Between 5600 MHz and 5650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.

453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kenya, Kuwait, Lebanon, Madagascar, Malaysia, Nigeria, Oman, 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 5650-5850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution **229 (WRC-03)** do not apply. (WRC-03)

454 *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5670-5725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-03)

455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5670-5850 MHz is also allocated to the fixed service on a primary basis. (WRC-03)

457 Not used.

457A In the bands 5925-6425 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 (WRC-03)**. (WRC-03)

457B In the bands 5925-6425 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, the Libyan Arab Jamahiriya, Jordan, Kuwait, 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-03)

458 In the band 6425-7075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7075-7250 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 6425-7025 MHz and 7075-7250 MHz.

458A In making assignments in the band 6700-7075 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 6650-6675.2 MHz from harmful interference from unwanted emissions.

458B The space-to-Earth allocation to the fixed-satellite service in the band 6700-7075 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 6700-7075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. **22.2**.

458C Administrations making submissions in the band 7025-7075 MHz (Earth-to-space) for geostationary-satellite systems in the fixed-satellite service after 17 November 1995 shall consult on the basis of relevant ITU-R Recommendations with the administrations that have notified and brought into use non-geostationary-satellite systems in this frequency band before 18 November 1995 upon request of the latter administrations. This consultation shall be with a view to facilitating shared operation of both geostationary-satellite systems in the fixed-satellite service and non-geostationary-satellite systems in this band.

459 *Additional allocation:* in the Russian Federation, the frequency bands 7100-7155 MHz and 7190-7235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-97)

461 *Additional allocation:* the bands 7250-7375 MHz (space-to-Earth) and 7900-8025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**.

461A The use of the band 7450-7550 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)

461B The use of the band 7750-7850 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems. (WRC-97)

462 (SUP - WRC-97)

462A In Regions 1 and 3 (except for Japan), in the band 8025-8400 MHz, the Earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration:

-174 dB(W/m²) in a 4 kHz band for $0^\circ \leq \theta < 5^\circ$

-174 + 0.5 ($\theta - 5$) dB(W/m²) in a 4 kHz band for $5^\circ \leq \theta < 25^\circ$

-164 dB(W/m²) in a 4 kHz band for $25^\circ \leq \theta \leq 90^\circ$

These values are subject to study under Resolution **124 (WRC-97)***. (WRC-97)

463 Aircraft stations are not permitted to transmit in the band 8025-8400 MHz. (WRC-97)

465 In the space research service, the use of the band 8400-8450 MHz is limited to deep space.

466 *Different category of service:* in Israel, Singapore and Sri Lanka, the allocation of the band 8400-8500 MHz to the space research service is on a secondary basis (see No. **5.32**). (WRC-03)

468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, the Libyan Arab Jamahiriya, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8500-8750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, the Czech Rep., Romania, Tajikistan, Turkmenistan and Ukraine, the band 8500-8750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-03)

469A In the band 8550-8650 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)

470 The use of the band 8750-8850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8800 MHz.

471 *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, the Netherlands, Qatar and Sudan, the bands 8825-8850 MHz and 9000-9200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only.

474 In the band 9200-9500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article **31**).

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

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. In the band 9 300-9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.

476 In the band 9 300-9 320 MHz in the radionavigation service, the use of shipborne radars, other than those existing on 1 January 1976, is not permitted until 1 January 2001.

476A In the band 9 500-9 800 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 radionavigation and radiolocation services. (WRC-97)

480 *Additional allocation:* in Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

482 In the band 10.6-10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed -3 dBW. These limits may be exceeded subject to agreement obtained under No. **9.21**. However, in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, China, the United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Kuwait, Latvia, Lebanon, Moldova, Nigeria, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Tajikistan and Turkmenistan, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable. (WRC-03)

483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Serbia and Montenegro, 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-03)

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.

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)

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.

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

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)

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

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**.

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)

497 The use of the band 13.25-13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.

498 (SUP - WRC-97)

98A 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)

499 *Additional allocation:* in Bangladesh, India and Pakistan, the band 13.25-14 GHz is also allocated to the fixed service on a primary basis.

500 *Additional allocation:* in Algeria, Angola, 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, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, the Syrian Arab Republic, Singapore, Sudan, Chad and Tunisia, the band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

501 *Additional allocation:* in Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-03)

501A The allocation of the band 13.4-13.75 GHz 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)

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)

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 size smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed:

- -115 dB(W/(m² · 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/(m² · 10 MHz)) for more than 1% of the time produced 3m 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)

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)

503A (SUP - WRC-03)

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.

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)

504B Aircraft earth stations operating in the aeronautical mobile-satellite service in the band 14-14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz band located on the territory of Spain, France, India, Italy, the United Kingdom and South Africa. (WRC-03)

504C In the band 14-14.25 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Côte d'Ivoire, Egypt, Guinea, India, Iran (Islamic Republic of), Kuwait, Lesotho, 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, 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-03)

505 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-03)

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.

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)

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, Greece and Malta, within the minimum distance given in Resolution **902 (WRC-03)** from these countries. (WRC-03)

508 *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Italy, Libyan Arab Jamahiriya, The Former Yugoslav Rep. of Macedonia, the United Kingdom, Serbia and Montenegro and Slovenia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-03)

508A In the band 14.25-14.3 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, China, Côte d'Ivoire, Egypt, France, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, 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, 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-03)

509 *Additional allocation:* in Japan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-2000)

509A In the band 14.3-14.5 GHz, the power flux-density produced on the territory of the countries of Saudi Arabia, Botswana, Cameroon, China, Côte d'Ivoire, Egypt, France, Gabon, Guinea, India, Iran (Islamic Republic of), Italy, Kuwait, Lesotho, 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, 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-03)

510 The use of the band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe.

511 *Additional allocation:* in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Kuwait, Lebanon, Pakistan, Qatar, Serbia and Montenegro, the Syrian Arab Republic, Slovenia and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43-15.63 GHz band shall not exceed the level of $-156 \text{ dB(W/m}^2\text{)}$ in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time. (WRC-2000)

511B (SUP - WRC-97)

511C Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340. 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. (WRC-97)

511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4-15.43 GHz and 15.63-15.7 GHz in the space-to-Earth direction and 15.63-15.65 GHz in the Earth-to-space direction. In the bands 15.4-15.43 GHz and 15.65-15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival. In the band 15.63-15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed $-146 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for any angle of arrival, it shall coordinate under No. **9.11A** with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63-15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. **4.10** applies). (WRC-97)

512 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, Congo (Rep. of the), Costa Rica, Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Malaysia, Mali, Morocco, Mauritania, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Serbia and Montenegro, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Togo and Yemen, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-03)

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**.

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)

514 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Serbia and Montenegro, Slovenia and Sudan, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-03)

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**.

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)

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)

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)

517 In Region 2, the allocation to the broadcasting-satellite service in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. After that date, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.

518 *Different category of service:* in Region 2, the allocation of the band 17.7-17.8 GHz to the mobile service is on a primary basis until 31 March 2007.

519 *Additional allocation:* the band 18.1-18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article **21**, Table **21-4**.

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)

521 *Alternative allocation:* in Germany, Denmark, the United Arab Emirates and Greece, the 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. **519** also apply. (WRC-03)

522 (SUP - WRC-2000)

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)

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 20000 km. (WRC-2000)

5.522C In the band 18.6-18.8 GHz, in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, the Libyan Arab Jamahiriya, Jordan, Lebanon, 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)

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)

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.

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)

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. **523C** and **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)

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)

524 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, 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, Tanzania, Chad, Togo and Tunisia, the band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band. (WRC-2000)

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.

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.

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.

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. **524**.

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. **526**.

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.

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.

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. **523C** and **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)

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.

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 Recommendations ITU-R SA.1278 and ITU-R SA.1625, respectively. (WRC-03)

536B In Germany, Saudi Arabia, Austria, Belgium, Brazil, Bulgaria, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Switzerland, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite 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-97)

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, 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-03)

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**.

537A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of HAPS within the band 27.5-28.35 GHz is limited, within the territory of the countries listed above, to a single 300 MHz sub-band. 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 (WRC-03)**. (WRC-03)

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. In the band 27.500-27.501 GHz, such space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article **21**, Table **21-4** on the Earth's surface.

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.

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.

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.

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)

542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, 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, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, 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-2000)

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.

543A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the 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 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. 545. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion as given in 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 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 take account of rain attenuation, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions as given above. See Resolution 145 (WRC-03). (WRC-03)

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.

545 *Different category of service:* in Armenia, Azerbaijan, Georgia, Mongolia, 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-03)

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 Resolutions 75 (WRC-2000) and 79 (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. **516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-03)

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)

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)

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)

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)

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)

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)

549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Jordan, Kuwait, Lebanon, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Singapore, Somalia, 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-03)

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)

550 *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Mongolia, Uzbekistan, 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-03)

551 (SUP - WRC-97)

551A (SUP - WRC-03)

551AA (SUP - WRC-03)

551B (SUP - WRC-2000)

551C (SUP - WRC-2000)

551D (SUP - WRC-2000)

551E (SUP – WRC - 2000)

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)

551G (SUP - WRC-03)

551H The equivalent power flux-density (epfd) produced in the 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 (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time:

–230 dB(W/m²) in 1 GHz and –246 dB(W/m²) 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

–209 dB(W/m²) 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 epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{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-03)

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 (space-to-Earth) 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/m²) in 1 GHz and -153 dB(W/m²) 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/m²) 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)

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.

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 (WRC-97)*. (WRC-97)

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)

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)

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)

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

555A (SUP - WRC-03)

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-

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

50.2 GHz shall not exceed $-151.8 \text{ dB(W/m}^2\text{)}$ in any 500 kHz band at the site of any radio astronomy station. (WRC-03)

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)

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 1000 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 $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ for all angles of arrival. (WRC-97)

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)

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)

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)

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)

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 1000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ for all angles of arrival. (WRC-97)

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)

559A The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006. (WRC-2000)

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.

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)

561A The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary

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)

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)

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 damage some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. (WRC-2000)

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)

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)

562D *Additional allocation:* In Korea (Rep. of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis until 2015. (WRC-2000)

562E The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz. (WRC-2000)

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)

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)

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 $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival. (WRC-2000)

563 (SUP - WRC-03)

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)

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)

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

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434

GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band. (WRC-2000)

FOOTNOTES EXCLUSIVE TO ECTEL MEMBER STATES

- E.1** The 1605-1705 kHz is allocated to Broadcasting on an exclusive basis
- E.2** The frequencies 21 745 kHz is allocated to Search and Rescue (SAR)
21 875 kHz is allocated to Distress and Safety Radio communication using DSC
2 182 kHz is allocated to
GMDSS
- E.3** The band 88.1-89.5 is allocated to community radio service
- E.3A** The occupied Bandwidth for FM broadcast stations is limited to 150 kHz unless otherwise authorized by the NTRC.
- E.3B** The bands 148-151MHz and 159-156 MHz, 163-167 MHz and 168-172 MHz are allocated to land mobile services Duplex operation using Tx/Tx spacing of 12.5 kHz and TX/Rx spacing of 5MHz.

The bands 151-153, 167-168 and 172-174 MHz are reserved for Simplex operation.

The bands 166-167MHz and 171-172MHz are reserved for Police, Emergency and other Public health services on a Duplex basis. Additionally, the band 173-174 MHz is allocated to Police, Emergency and other Public Health services.
- E.4** The band **235-267 MHz**. is allocated to Digital Audio Broadcast s ervices
- E.5** The band 335-399 MHz is allocated to Broadcasting for studio to Transmitter Links, STL
- E.6** The band 454.975-462.5625 MHz is allocated to Broadcasting for Fixed Studio to Transmitter Links, STL
- E.7** The band 467.7125-470 MHz is allocated to Broadcasting for Radio and Television Outside Broadcast operation.
- E.8** In the Commonwealth of Dominica the band 912-915 is allocated to GSM services.
- E.9** The band 1990-2025 MHz is allocated for future Mobile Services e.g. 3G mobile services.
- E.10** The band 2520-2655 is allocated on a Primary basis to new technologies (Wi Max)
- E.10A** The band 2655-2670 MHz is allocated to Future Technologies including

Wi Max.

E.10B The band 2670-2690 is allocated to future technologies including WiMax

E.11 The band Is allocated to Fixed Wireless Access

E.11A The band ...is allocated to Fixed Wireless Access

7.0 SPECTRUM MANAGEMENT IN ECTEL MEMBER STATES

7.1 Technical Planning Tools

The Spectrum plan is the principal technical document providing authority to the information on the allocation of frequency bands to the different types of services used in radiocommunication. The Plan in its formulation takes into account the policy and objectives related to the future use of radio frequency in the Member States. The Spectrum Plan provides valuable information for radio system planning and implementation within the ECTEL Member States. System designers must consult the NTRC prior to any system designs utilizing spectrum resource as there are critical elements which are integral in the spectrum management process within the ECTEL States.

The critical elements which comprise the planning tools in spectrum management are:

- Bands: allocated exclusively to broadcasting.
- Band plans and Channel assignment plans
- Designation of licensed and unlicensed bands
- Requirements for frequency assignments in legal instruments
- Conditions applicable to spectrum licensing, apparatus licensing, equipment authorization, licence types viz. Individual licence, Class license, requirements for standards compliance, spectrum harmonization.

Electronic access to the spectrum database is available to the public from the ECTEL Web Site at <http://www.ectel.int>

The management and control of the electro magnetic spectrum are carried out by the National Telecommunications Regulatory Commission in each Member State.

8.0 Broadcasting Services

The Spectrum Plan makes provision for the allocation of spectrum for the provision of broadcasting services in keeping with the relevant provisions of the Telecommunications Act 2000.

The bands as designated under the plan are:

- (a) 525-1705 kHz. AM radio transmitters are assigned frequencies in this band
- b) 44-50 MHz and 54-72 MHz. Analog Television transmitters are assigned frequencies in this band. (TV channels 2,3 and 4)

- c) 76-88 MHz. Analog television transmitters are assigned frequencies in this band (TV channels 5 and 6)
- d) 88-108 MHz. FM radio transmitters are assigned frequencies in this band. FM radio broadcasting is allocated 100 channels from 88.1 to 107.9 MHz.
- e) The frequencies assigned in the 88-108 MHz band are for the delivery of FM broadcasting and are not intended to be used for the purpose of linking one broadcast transmitter site to another broadcast transmitter site.
- f) 335-399 MHz Studio to Transmitter Links are assigned frequencies in this band.
- g) 174-216 MHz. Analog television transmitters are assigned frequencies in this band.
- h) 470-512 MHz. Analog television providing UHF television broadcast are assigned frequencies in this band.
- i) The assignment of frequencies in the respective broadcast bands are made subject to the adoption of the relevant standards promulgated under the Broadcast Regulations.

8.1 AM STANDARDS

The standards contained in the AM Standards document are the conditions necessary for the establishment of sound broadcasting in the Medium Wave (AM) band and in addition for the issuance of a Type Approval Certification for AM transmitters.

Type Approval Certification will be issued in accordance with accepted International Standards that the equipment has met or test carried by the applicant and certified by a professional engineer.

The Authority reserves the right to require adjustments to be made to the equipment should it cause interference notwithstanding having been certified previously.

The assignment of a broadcast channel is made in conformity with the Americas Regional Plan, RJ81.

8.2 DEFINITIONS

8.2.1 AM broadcast channel

The band of frequencies occupied by the carrier and the upper and lower sidebands of an AM broadcast signal with the carrier frequency at the centre. Channels are designated by their assigned carrier frequencies. The 117 carrier frequencies assigned to AM broadcast stations begin at 540 kHz and progress in 10 kHz steps to 1700 kHz.

8.2.2 Class A Station.

A Class A station is an unlimited time station (that is, it can broadcast 24 hours per day) that operates on a clear channel. The operating power shall not be less than 10 kilowatts (kW) or more than 50 kW.

8.2.3 Class B Station.

A Class B station is an unlimited time station. Class B stations are authorized to operate with a minimum power of 0.250 kW (250 watts) and a maximum power of 50 kW. (If a Class B station operates with less than 0.250 kW, the RMS must be equal to or greater than 141 mV/m at 1 km for the actual power.) If the station is authorized to operate in the expanded band (1610 to 1700 kHz), the maximum power is 10 kW.

8.2.4 Class C Station.

A Class C station is an unlimited time station that operates on a local channel. The power shall not be less than 0.25 kW nor more than 1 kW. Class C stations that are licensed to operate with 0.100 kW may continue to operate as licensed.

8.2.5 Class D Station.

A Class D station operates either daytime, limited time, or unlimited time with a nighttime power less than 0.250 kW and an equivalent RMS antenna field less than 141 mV/m at 1 km for the actual power. Class D stations shall operate with *daytime* powers not less than 0.250 kW or more than 50 kW. NOTE: If a station is an existing daytime-only station, its class will be Class D.

8.3 FM STANDARDS

8.3.1 The standards contained in the FM Standards document are the conditions necessary for the establishment of sound broadcasting in the FM band and in addition for the issuance of a Type Approval Certification for FM transmitters.

8.3.2 Type Approval Certification will be issued in accordance with accepted international standards that the equipment has met or test carried by the applicant and certified by a professional engineer.

- 8.3.3 The Authority [NTRC] reserves the right to require adjustments to be made to the equipment should it cause interference notwithstanding having been certified previously
- 8.3.4 Major changes in design made to the equipment, other than for the replacement of defective parts, will void the certification unless notified and approved by the Authority.
- 8.3.5 Transmitters will be authorized for power levels which will provide the minimum accepted field strength of 70 dBu (3.16 μ V/m) but shall not exceed 1KW transmitter power and an ERP of 3dBK
- 8.3.6 Licensees of FM stations will not be permitted to operate same programming in multiple sub-bands
- 8.3.7 The use of prime (broadcast) frequencies (88-108 MHz) for program rebroadcast will not be permitted.

9.0 PUBLIC MOBILE TELEPHONE SERVICES BANDS

The Public Mobile Telephone or Cellular services in the ECTEL Member States utilize two types of technologies. These technologies are based on global standards and provide for domestic and international use. The technologies are (i) Time Division Multiple Access (TDMA) and (ii) Global Standard for Mobile System (GSM). Other cellular technologies are not presently used in the provision of public mobile telephone services in ECTEL Member States.

The spectrum allocated to the service providers is provided on an equitable basis thereby ensuring that, in each island, all service providers have the same amount of bandwidth. The spectrum used by the service providers follows international practices ensuring that equipment can be sourced from suppliers anywhere in the world.

There are four bands of spectrum allocated for the provision of cellular services in the ECTEL region. These are; the 800 MHz, 900 MHz, 1800 MHz and 1900 MHz. The actual bands allocated in the plan are associated with the following types of technologies.

TDMA – 800 is established in the band 825-835 MHz for Mobile transmit and 870 – 880 MHz for Base Transmit

GSM - 900 is established in the band 890-915 MHz and 935-960 MHz

GSM -1800 is established in the band 1710-1785 MHz and 1805-1880 MHz

GSM -1900 is established in the band 1870-1910 and 1950-1990 MHz.

In this region the GSM 900 has been extended to provide a larger frequency range. The extender region starts from 880 MHz and creates a new band 880-915 MHz (Uplink) and 925-960 MHz down link. The new band 880-890 MHz and 925-935 MHz is called E-GSM.

A new GSM band which uses the 450-MHz band and known as the GSM-400 will be allocated for future use in the ECTEL Member States.

10.0 LINK LENGTH POLICY

The use of Fixed Local Loop connections in providing wireless access is a new trend in providing voice and data as an alternative to cable based networks. The role of point-to-point digital Microwave radio is becoming extremely important in creating successfully run Wireless Local Loop networks.

The need for efficiency in the utilization of spectrum makes appropriate planning and management for the prevention of misuse and interference between operators high on the agenda of the spectrum manager. The achievement of this goal is made possible with the selection and implementation of appropriate radio equipment for deployment within the network. The radio equipment chosen must employ designs having characteristics/specification as outlined below.

- High Spectral efficiency for the minimization of large channel bandwidth
- Radio performance of a high standard created by modern radio design utilizing facilities for the enhancement of radio wave propagation.
- High system gain at the output stage in addition to received signal threshold
- High environmental specification for reliable operation in harsh operating condition
- Equipment reliability and maintainability for low life cycle cost

The implementation of a Link Length Policy ensures that the length of the particular path will determine the frequency bands which will be made available for the operator to choose from. The rule of thumb is that the shorter the path length the higher the frequency to be chosen. Conversely, if the path length is very long the operator will be given the choice of lower frequencies.

For the policy to be effective, site selection will become a very important determinant. The plan is geared to efficiency in the use of the spectrum and operators will be advised to select sites that match the frequency which are available. Other factors influencing the choice of frequency band within the policy are the capacity of the link to be established, the terrain, and rainfall and antenna size.

11.0 UNLICENSED SPECTRUM

The spectrum bands identified as ISM bands and designated in the Plan as 902-928 MHz, 2.4-2.483 GHz and 5.775-5.83 GHz are under consideration for use as license exempt spectrum in the ECTEL Member States.

12.0 CHANNELIZATION PLAN

The radio frequency spectrum in the ECTEL Member States is allocated to operators on a harmonized basis. This ensures that those spectrum bands, which are used for broadband networks, are available to as many operators as possible.

This harmonization is achieved by using a standardized channelization scheme in determining the channel spacing or transmits to transmit separation for the respective bands. The separation between transmit and receive frequencies is also determined by the same arrangements as set out in the ITU-R F-Series publications. To ensure compliance with the channelization plan the technical characteristics of radio equipment must conform to ITU-R radio regulations in force and any technical parameters specified in documents such as Frequency authorization or Type Approval issued by the NTRC.

The establishment of channel schemes is based on homogenous arrangement within a particular band and may result in different number of channels depending on the channel capacity required. The derived channels are established in the lower part of the band as the Go channels and Return channels in the upper part of the band. The use of different polarization is employed to create reuse of frequencies where the demand for that band is great. In a number of cases the application of interstitial channeling is also employed for spectrum optimization.

13.0 ASSIGNMENT PROCESS

The assignment of spectrum is carried out after an applicant has been issued one or more of the three types of licences. The different types of licences are known as:

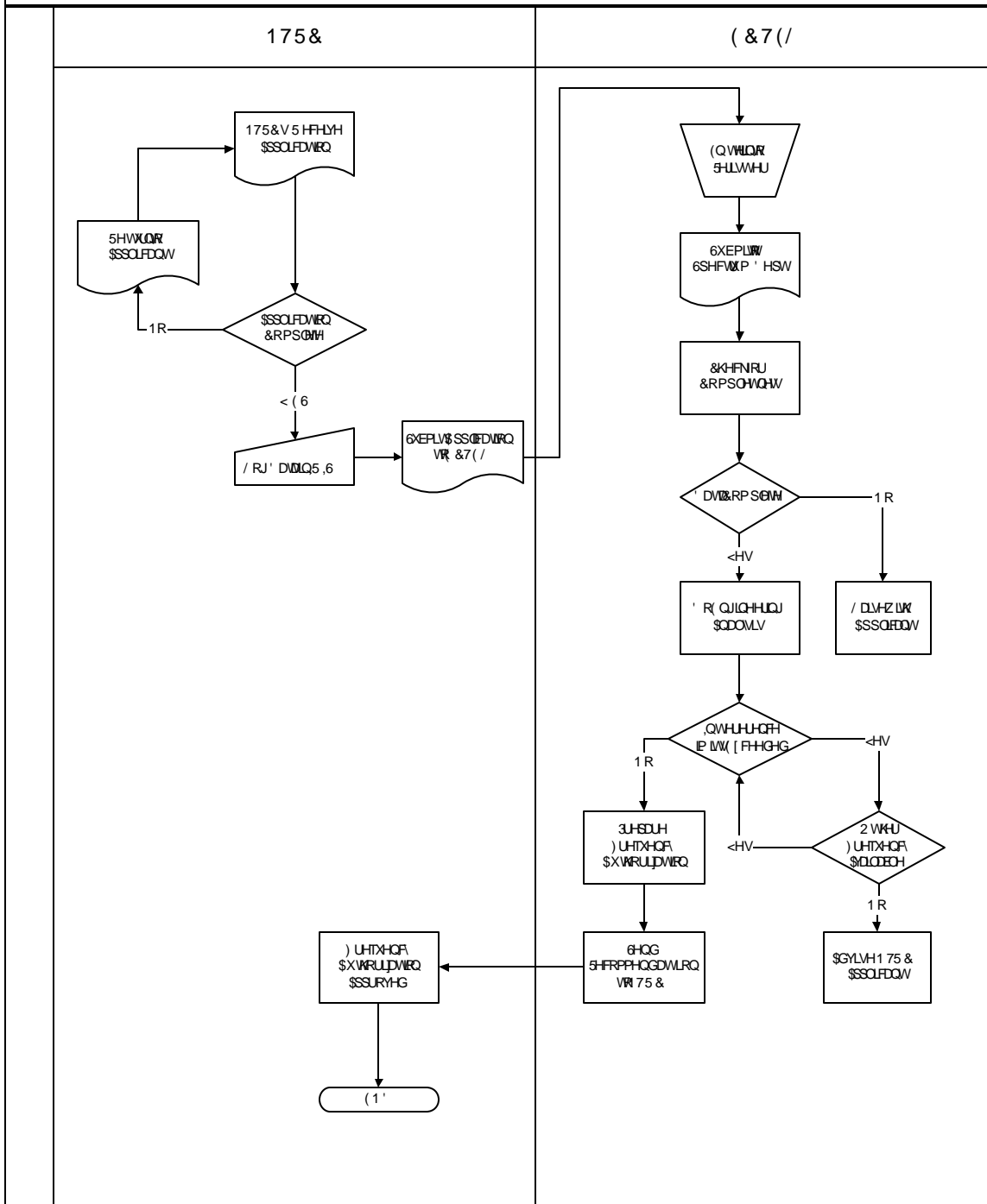
1. Individual Licence
2. Class Licence
3. Special Licence

The process by which spectrum is granted to the applicant is called Frequency Authorization. An applicant desirous of obtaining spectrum for a wireless network or communication applies to the NTRC for one of the above types of licence and the appropriate frequency authorization. Having been granted the licence the NTRC submits the request for frequency authorization to ECTEL where the technical evaluation is

conducted. The basis of the determination is to ensure that the operation of the network will not contribute to electro-magnetic incompatibility within the spectrum. The evaluation also ensures that the new operator would not affect radio systems in operation when the network comes on stream.

Upon completion, a recommendation is made to the minister responsible for telecommunications. The minister taking account of the recommendation grants or rejects the request.

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14.0 SPECTRUM RECALL

The authorisation to use the spectrum is based on the need to use the spectrum and the availability of the spectrum. The plan allocates spectrum to various services as dictated by the policy and objectives of the Member State. The assignment of spectrum to operators is always subject to the availability of spectrum and the need to develop the telecommunications infrastructure in the respective Member State.

The Minister may upon the advise of the Commission and consistent with the Spectrum management plan, reassign frequencies

- a) to allow for the introduction of new technologies
- b) where it is necessary to ensure the efficient use of the spectrum
- c) where the overall demand for spectrum for a particular service cannot be met
- d) where by virtue of expediency another licensee requests and the Minister considers it necessary to do so
- e) where spectrum has not been utilized for a particular service after an extended period