(CONTINUED)

| | Reference of Article S9 | Case | Frequency bands | Threshold/Condition | Calculation method | Remarks |
|---|---|---|---|---|---|---|
| ADD | | | | | 2) For receiving earth stations in the meteorological-satellite service in frequency bands shared with the meteorological aids service, the coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius | |

(CONTINUED)

| | Reference of Article S9 | Case | Frequency bands | Threshold/Condition | Calculation method | Remarks |
|---|---|---|---|---|---|---|
| **ADD** | No. **S9.17bis** GSO, non-GSO/ GSO, non-GSO | A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission, where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station | Any frequency band allocated to a space service | The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of a coordinated earth station | i) for bands in Table **S5-1A**, see Table **S5-2**<br>ii) see Recommendations ITU-R IS.847, IS.848 and IS.849 | The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A**. |
| **MOD** | No. **S9.18** terrestrial/GSO, non-GSO | Any transmitting station of a terrestrial service in the bands mentioned in No. **S9.17** within the coordination area of an earth station | Any frequency band allocated to a space service, except those mentioned in Appendices **S30** and **S30A** | Transmitting terrestrial station is situated within the coordination area of an already coordinated receiving earth station | See remarks | The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17** |

(CONTINUED)

| | Reference of Article S9 | Case | Frequency bands | Threshold/Condition | Calculation method | Remarks |
|---|---|---|---|---|---|---|
| **MOD** | No. **S9.19** terrestrial/GSO | A transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the BSS | 11.7 - 12.2 GHz (R3)<br>11.7 - 12.5 GHz (R1)<br>12.2 - 12.7 GHz (R2)<br>and the bands listed in No. **S9.11** | i) Necessary bandwidths overlap; and<br>ii) the pfd of the terrestrial station at the edge of the BSS service area exceeds the permissible level | i) Check by using the assigned frequencies and bandwidths<br>ii) Annex 3 to Appendix **S30** for bands covered by that Appendix | See also Article **6** of Appendix **S30**<br>The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A**. |
| **MOD** | No. **S9.21** terrestrial, GSO, non-GSO/ terrestrial, GSO, non-GSO | A station of a service for which the requirement to obtain the agreement of other administrations is included in a footnote to the Table of Frequency Allocations, referring to No. **S9.21** | Band(s) indicated in the relevant footnote | Condition: Incompatibility established by the use of Appendices **S7**, **S8**, technical annexes of Appendices **S30**, **S30A** and **S30B**, pfd values specified in some of the footnotes, other technical provisions of the Radio Regulations or ITU-R Recommendations as appropriate | Methods specified in, or adapted from, Appendices **S7**, **S8**, **S30**, **S30A**, **S30B**, other technical provisions of the Radio Regulations or ITU-R Recommendations | |

TABLE S5-1A

**MOD**

**Applicability of No. S9.11bis provisions**

| Frequency band (MHz) | RR footnote | Space services in footnotes referring to No. **S9.11bis** | Other space services to which No. **S9.11bis** provisions apply equally | Power flux-density limit in dB(W/m²/4 kHz) | Date of entry into force of the new allocations |
|---|---|---|---|---|---|
| 137 - 137.025<br><br>137.175 - 137.825 | **S5.208** | MOBILE-SATELLITE (S - E) | SPACE OPERATION (S-E)<br>MET-SATELLITE (S-E)<br>SPACE RESEARCH (S-E) | -125 (S)[1] | Existing allocation |
| 137.025 - 137.175<br>137.825 - 138 | **S5.208** | mobile-satellite (S - E) | --- | -125 (S) | Existing allocation |
| 148 - 149.9 | **S5.219** | MSS (E - S) | --- | | Existing allocation |
| 149.9 - 150.05 | **S5.220** | LMSS (E - S) | --- | | Existing allocation (secondary until 1.1.97, No. **S5.224**) |
| 312 - 315 | **S5.255** | mss (E - S) | --- | | Existing allocation |
| 387 - 390 | **S5.255** | mss (S - E) | --- | | Existing allocation |
| 400.15 - 401 | **S5.264** | MSS (S - E) | MET-SATELLITE (S-E)<br>SPACE RESEARCH (S-E) | -125 (S) | Existing allocation |
| 1 492 - 1 525 | **S5.348** | MSS (S - E) (R2, except USA) | --- | (Article **S21**, Table [AR28]) (S) | Existing allocation |

1 Symbol (S) in this column means that coordination of space stations of the mobile-satellite service with respect to terrestrial services is required only if the power flux-density at the Earth's surface exceeds the indicated limit.

(CONTINUED)

| Frequency band (MHz) | RR footnote | Space services in footnotes referring to No. **S9.11bis** | Other space services to which No. **S9.11bis** provisions apply equally | Power flux-density limit in dB(W/m$^2$/4 kHz) | Date of entry into force of the new allocations |
|---|---|---|---|---|---|
| 1 525 - 1 530 (R1, R3) | **S5.354** | MSS (S - E) (or subset) | SPACE OPERATION (S-E) | (Article **S21**, Table [AR28]) (S) | Existing allocation |
| 1 525 - 1 530 (R1, R3) | **S5.354** | lmss (S - E)(R1) | Earth exploration - sat. | (Article **S21**, Table [AR28]) (S) | Existing allocation |
| 1 530 - 1 535 | **S5.354** | MSS (S - E) (or subset) | SPACE OPERATION (S-E) | | Existing allocation |
| 1 533 - 1 535 | **S5.354** | lmss (S - E) | Earth exploration - sat. | | Existing allocation |
| 1 535 - 1 544 | **S5.354** | lmss (S - E) | --- | | Existing allocation |
| 1 535 - 1 559 | **S5.354** | MSS (S - E) (or subset) | --- | | Existing allocation |
| 1 610 - 1 626.5 | **S5.364** | MSS (E - S), RDSS (R2+No. **S5.369**) | --- | Limits on e.i.r.p. of mobile earth stations | Existing allocation |
| 1 610 - 1 626.5 | **S5.364** | rdss (E - S)(R1, R3) | --- | Limits on e.i.r.p. of mobile earth stations | Existing allocation |
| 1 613.8 - 1 626.5 | **S5.365** | mss (S - E) | --- | | Existing allocation |
| 1 626.5 - 1 660 | **S5.354** | MSS (E - S) (or subset) | --- | | Existing allocation |
| 1 626.5 - 1 631.5<br>1 634.5 - 1 645.5 | **S5.354** | lmss (E - S) | --- | | Existing allocation |
| 1 660 - 1 660.5 | **S5.354** | MSS (E - S) (or subset) | --- | | Existing allocation |
| 1 675 - 1 700 | **S5.377** | MSS (E - S)(R2) | --- | | Existing allocation |
| 1 700 - 1 710 | **S5.377** | MSS (E - S)(R2) | SPACE RESEARCH (S-E) No. **S5.384** | | Existing allocation |

(CONTINUED)

| Frequency band (MHz) | RR footnote | Space services in footnotes referring to No. **S9.11bis** | Other space services to which No. **S9.11bis** provisions apply equally | Power flux-density limit in dB(W/m$^2$/4 kHz) | Date of entry into force of the new allocations |
|---|---|---|---|---|---|
| 1 970 - 1 980 | **S5.389** | MSS (E - S)(R2) | --- | | 01.01.2005 |
| 1 980 - 2 010 | **S5.389** | MSS (E - S) | --- | | 01.01.2005 |
| 2 160 - 2 170 | **S5.389** | MSS (S - E)(R2) | --- | (Article **S21**, Table [AR28]) (S) | 01.01.2005 |
| 2 170 - 2 200 | **S5.389** | MSS (S - E) | --- | (Article **S21**, Table [AR28]) (S) | 01.01.2005 |
| 2 483.5 - 2 500 | **S5.402** | MSS (S - E)<br>RDSS (S - E)<br>(R2+No. **S5.400**) | --- | (Article **S21**, Table [AR28]) (S) | Existing allocation |
| 2 483.5 - 2 500 | **S5.402** | rdss (S - E)(R1, R3) | --- | (Article **S21**, Table [AR28]) (S) | Existing allocation |
| 2 500 - 2 520 | **S5.414**<br>**S5.403** | MSS (S - E) | FSS (S-E) (R2, R3),<br>RDSS (S-E) No. **S5.404** | (Article **S21**, Table [AR28]) (S) | 01.01.2005; (until 2005: Article **S9**: MSS (-AMSS)) |
| 2 520 - 2 535 | **S5.403** | MSS (-AMSS)<br>(S - E) | BSS<br>FSS (S-E)(R2, R3) | (Article **S21**, Table [AR28]) (S) | Existing allocation |
| 2 655 - 2 670 | **S5.420** | MSS (-AMSS)<br>(E - S) | BSS<br>FSS (S-E) (R2, R3) | | Existing allocation |
| 2 670 - 2 690 | **S5.419**<br>**S5.420** | MSS (E - S) | FSS (E-S), (S-E)(R2)<br>FSS (E-S)(R3) | | 01.01.2005; (until 2005: Article **S9**: MSS (-AMSS)) |

TABLE S5-2

**Coordination threshold values**

**ADD**

| Frequency band (MHz) | Service to be protected | Coordination threshold values | | | | |
|---|---|---|---|---|---|---|
| | | Geostationary space stations | | Non-geostationary space stations | | |
| | | pfd (per space station) calculation factors (NOTE 2) | | pfd (per space station) calculation factors (NOTE 2) | | % FDP (in 1 MHz) (NOTE 1) |
| | | P dB(W/m$^2$) in 4 kHz | r dB/deg | P dB(W/m$^2$) in 4 kHz | r dB/deg | |
| 1 492 - 1 525 | analogue FS | -152 | 0.5 | -152 | 0.5 | |
| | digital FS | -152 | 0.5 | | | 25 |
| | other terrestrial services (NOTE 4) | -152 | 0.5 | -152 | 0.5 | |
| 1 525 - 1 530 | analogue FS | -152 | 0.5 | -152 | 0.5 | |
| | digital FS | -152 | 0.5 | | | 25 |
| | other terrestrial services (NOTE 4) | -152 | 0.5 | -152 | 0.5 | |
| 2 160 - 2 200 (NOTE 3) | analogue FS | -152 | 0.5 | -147 | 0.5 | |
| | digital FS | -152 | 0.5 | | | 25 |
| | other terrestrial services (NOTE 4) | -152 | 0.5 | -147 | 0.5 | |
| 2 483.5 - 2 500 | fixed | -152 | 0.5 | -150 | 0.65 | |
| | other terrestrial services (NOTE 4) | -152 | 0.5 | -150 | 0.65 | |
| 2 500 - 2 520 | analogue FS | -152 | 0.5 | -152 | 0.5 | |
| | digital FS | -152 | 0.5 | | | 25 |
| | other terrestrial services (NOTE 4) | -152 | 0.5 | -152 | 0.5 | |
| 2 520 - 2 535 | analogue FS | -160 | 0.75 | -152 | 0.5 | |
| | digital FS | -160 | 0.75 | | | 25 |
| | other terrestrial services (NOTE 4) | -160 | 0.75 | -152 | 0.5 | |

NOTE 1 – The calculation of FDP (fractional degradation in performance) is contained in section 2.1, using reference FS parameters contained in sections 2.2.1 and 2.2.3.

**SUP**

TABLE S5-3

APPENDIX S9

**Report of an Irregularity or Infringement**

(see Article **S15**, Section V)

*(The contents of this Appendix have not been reproduced since no change of substance is recommended to the present Appendix 22.)*

APPENDIX S10

**Report of Harmful Interference**

(see Article **S15**, Section VI)

*(The contents of this Appendix have not been reproduced since no change of substance is recommended to the present Appendix 23.)*

APPENDIX S11

**Double-Sideband (DSB) or Single-Sideband (SSB) System Specifications in the HF Broadcasting Service**

*(The contents of this Appendix have not been reproduced since no change of substance is recommended to the present Appendix 45.)*

APPENDIX S12

**Special Rules Applicable to Radiobeacons**

(see Article **S28**)

**Section I. Aeronautical Radiobeacons**

(1) The assignment of frequencies to aeronautical radiobeacons operating in the bands between 160 kHz and 535 kHz shall be based on a protection ratio against interference of at least 15 dB for each beacon throughout its service area.

(2) The radiated power should be kept to the minimum value necessary to give the desired field strength at the service range.

(3) The daylight service range of radiobeacons referred to in (1) above shall be based on the following field strengths:

(4) *Regions 1 and 2*

- 70 microvolts per metre for radiobeacons north of 30° N;
- 120 microvolts per metre for radiobeacons between 30° N and 30° S;
- 70 microvolts per metre for radiobeacons south of 30° S.

(5) *Region 3*

- 70 microvolts per metre for radiobeacons north of 40° N;
- 120 microvolts per metre for radiobeacons between 40° N and 50° S;
- 70 microvolts per metre for radiobeacons south of 50° S.

**Section II. Maritime Radiobeacons**

(1) The protection ratio required for assignment of frequencies to maritime radiobeacons operating in the bands between 283.5 kHz and 335 kHz shall be based on the effective radiated power being kept to the minimum value necessary to give the desired field strength at the service range and the need to provide adequate geographical separation between radiobeacons operating on the same frequency and at the same time, to avoid harmful interference.

(2) The daylight service range of the radiobeacons referred to in (1) above shall be based on the following field strengths:

(3) *Region 1*

- 50 microvolts per metre for radiobeacons north of 43° N;
- 75 microvolts per metre for radiobeacons between 43° N and 30° N;
- 100 microvolts per metre for radiobeacons between 30° N and 30° S;
- 75 microvolts per metre for radiobeacons between 30° S and 43° S;
- 50 microvolts per metre for radiobeacons south of 43° S.

(4) *Region 2*

- 50 microvolts per metre for radiobeacons north of 40° N;
- 75 microvolts per metre for radiobeacons between 40° N and 31° N;
- 100 microvolts per metre for radiobeacons between 31° N and 30° S;
- 75 microvolts per metre for radiobeacons between 30° S and 43° S;
- 50 microvolts per metre for radiobeacons south of 43° S.

(5) *Region 3*

- 75 microvolts per metre for radiobeacons north of 40° N;
- 100 microvolts per metre for radiobeacons between 40° N and 50° S;
- 75 microvolts per metre for radiobeacons south of 50° S.

(6) The carrier frequencies of maritime radiobeacons and the separation between channels shall be based on the use of integer multiples of 100 Hz. The separation between adjacent carrier frequencies should be based on relevant ITU-R Recommendations.

# APPENDIX S13

## Distress and Safety Communications (Non-GMDSS)

(see Article **S30**)

## PART A

*This Appendix contains two parts: A and B: Part A of this Appendix contains the complete texts of the present Chapter IX. The present Chapter IX contains the following articles, which are to be included without change and are therefore not reproduced here:*

*a. ARTICLE **37** - General Provisions*

*b. ARTICLE **38** - Frequencies for Distress and Safety*

*c. ARTICLE **39** - Distress Communications*

*d. ARTICLE **40** - Urgency and Safety Transmissions, and Medical Transports*

*e. ARTICLE **41** - Alarm and Warning Signals*

*f. ARTICLE **42** - Special Services Relating to Safety*

*In order to have all the provisions of the present Radio Regulations related to non-GMDSS distress and safety communications assembled in one place, the provisions of Sections II and III of Article **55** and Section II of Article **56**, amended as recommended by VGE, are also included in this annex and reproduced in Part B of this Appendix.*

# PART B

## Requirements for Personnel

### Section I. Categories of Certificates

**1.1** There are four categories of certificates, shown in descending order of requirements, for radiotelegraph operators. Each lower order certificate has lesser requirements and except for code speed, its requirements are a subset of the next higher certificate. The highest order Morse code speed certificate is the first-class radiotelegraph;

*a)* the radiocommunication operator's general certificate;

*b)* the first-class radiotelegraph operator's certificate;

*c)* the second-class radiotelegraph operator's certificate;

*d)* the radiotelegraph operator's special certificate.

There are two categories of radiotelephone operators' certificates, general and restricted.

**1.2** The holder of a radiocommunication operator's general certificate, or of a first-class or second-class radiotelegraph operator's certificate, may carry out the radiotelegraph or radiotelephone service of any ship station.

**1.3** The holder of a radiotelephone operator's general certificate may carry out the radiotelephone service of any ship station.

**1.4** The holder of a radiotelephone operator's restricted certificate may carry out the radiotelephone service of any ship station, provided that the operation of the transmitter requires only the use of simple external controls, and excludes all manual adjustment of frequency determining elements, with the stability of the frequencies maintained by the transmitter itself within the limits of tolerance specified by AP **S2**, and the peak envelope power of the transmitter does not exceed 1.5 kW.

**1.5** The radiotelephone operator's restricted certificate may be limited exclusively to one or more of the maritime mobile frequency bands. In such cases the certificate shall be suitably endorsed.

**1.6** The radiotelegraph service of ships for which a radiotelegraph installation is not made compulsory by international agreements, as well as the radiotelephone service of ship stations for which only a radiotelephone operator's restricted certificate is required, may be carried out by the holder of a radiotelegraph operator's special certificate[1].

---

[1] The radiotelegraph service of ships equipped with a radiotelegraph installation in accordance with Regulation 131 (2) (a) of the International Convention for the Safety of Fishing Vessels (Torremolinos, 1977) may be carried out by the holder of a radiotelegraph operator's special certificate.

**1.7** However, where the conditions specified in Table **[AP S13]** are satisfied, the radiotelegraph service of ships for which a radiotelegraph installation is not made compulsory by international agreements, as well as the radiotelephone service of any ship station, may be carried out by the holder of a radiotelegraph operator's special certificate[2].

---

[2] The radiotelegraph service of ships equipped with a radiotelegraph installation in accordance with Regulation 131 (2) (a) of the International Convention for the Safety of Fishing Vessels (Torremolinos, 1977) may be carried out by the holder of a radiotelegraph operator's special certificate.

**1.8** Exceptionally, the second-class radiotelegraph operator's certificate as well as the radiotelegraph operator's special certificate may be limited exclusively to the radiotelegraph service. In such cases the certificate shall be suitably endorsed.

## Section II. Conditions for the Issue of Certificates

### *A. General*

**2.1** The conditions to be imposed for obtaining the various certificates are contained in the following paragraphs and represent the minimum requirements.

**2.2** Each administration is free to fix the number of examinations necessary to obtain each certificate.

**2.3** The administration which issues a certificate may, before authorizing an operator to carry out the service on board a ship, require the fulfilment of other conditions (for example: experience with automatic communication devices; further technical and professional knowledge relating particularly to navigation; physical fitness; etc.).

**2.4** Administrations should take whatever steps they consider necessary to ensure the continued proficiency of operators after prolonged absences from operational duties.

**2.5** However, with respect to the maritime mobile service, administrations should also take whatever steps they consider necessary to ensure the continued proficiency of operators while in service.

**2.6** The requirements for candidates to obtain one of the certificates described in this section with regard to technical and professional knowledge and qualifications are shown in the following Table **[AP S13]**.

TABLE [AP S13]

**Conditions for the Issue of Operator's Certificate**

| **The relevant certificate is issued to a candidate who has shown proof of the technical and professional knowledge and qualifications enumerated below, as applicable, and indicated by an asterisk (*) in the appropriate box** | **Radiocom-municat. Operator's General Certificate** | **1st-Class Radio telegraph Operator's Certificate** | **2nd-Class Radio-Telegraph Operator's Certificate** | **Radio-Telegraph Operator's Special Certificate** |
|---|---|---|---|---|
| Knowledge of the principles of electricity and the theory of radio and of electronics sufficient to meet the requirements specified below: | * | | | |
| | | | | |
| Theoretical knowledge of modern radiocommunication equipment, including marine radiotelegraph and radiotelephone transmitters and receivers, marine antenna systems, automatic alarm devices, radio equipment for lifeboats and other survival craft, direction-finding equipment, together with all auxiliary items including power supply (such as motors, alternators, generators, inverters, rectifiers and accumulators), as well as an elementary knowledge of the principles of other apparatus generally used for radionavigation, with particular reference to maintaining the equipment in service. | * | | | |
| | | | | |
| Practical knowledge of the operation, adjustment and maintenance of the apparatus mentioned above, including the taking of direction-finding bearings and knowledge of the principles of the calibration of radio direction-finding apparatus. | * | | | |
| | | | | |
| Practical knowledge necessary for the location and remedying (using appropriate testing equipment and tools) of faults in the apparatus mentioned above which may occur during a voyage. | * | | | |

| **The relevant certificate is issued to a candidate who has shown proof of the technical and professional knowledge and qualifications enumerated below, as applicable, and indicated by an asterisk (*) in the appropriate box** | **Radiocom-municat. Operator's General Certificate** | **1st-Class Radio telegraph Operator's Certificate** | **2nd-Class Radio-Telegraph Operator's Certificate** | **Radio-Telegraph Operator's Special Certificate** |
|---|---|---|---|---|
| Knowledge both of the general principles of electricity and of the theory of radio, knowledge of the adjustment and practical working of various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as general knowledge of the principles of operation of other apparatus generally used for radionavigation. | | * | | |
| Elementary theoretical and practical knowledge of electricity and radio, knowledge of the adjustment and practical working of various types of radiotelegraph and radiotelephone apparatus used in the mobile service, including apparatus used for radio direction-finding and the taking of direction-finding bearings, as well as an elementary knowledge of the principles of operation of other apparatus generally used for radionavigation. | | | * | |
| | | | | |
| Theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned above. | | * | | |
| Elementary theoretical and practical knowledge of the operation and maintenance of apparatus, such as motor-generators, storage batteries, etc., used in the operation and adjustment of the radiotelegraph, radiotelephone and radio direction-finding apparatus mentioned above. | | | * | |
| | | | | |
| Practical knowledge necessary to repair, with the means available on board, damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a voyage. | | * | | |
| Practical knowledge sufficient for effecting repairs in the case of minor damage which may occur to the radiotelegraph, radiotelephone and radio direction-finding apparatus during a voyage. | | | * | |

| **The relevant certificate is issued to a candidate who has shown proof of the technical and professional knowledge and qualifications enumerated below, as applicable, and indicated by an asterisk (*) in the appropriate box** | **Radiocom-municat. Operator's General Certificate** | **1st-Class Radio telegraph Operator's Certificate** | **2nd-Class Radio-Telegraph Operator's Certificate** | **Radio-Telegraph Operator's Special Certificate** |
|---|---|---|---|---|
| Ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of sixteen groups a minute, and a plain language text at a speed of twenty words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and receiving shall be, as a rule, five minutes. | * | | * | * |
| Ability to send correctly by hand and to receive correctly by ear, in the Morse code, code groups (mixed letters, figures and punctuation marks) at a speed of twenty groups a minute, and a plain language text at a speed of twenty-five words a minute. Each code group shall comprise five characters, each figure or punctuation mark counting as two characters. The average word of the text in plain language shall contain five characters. The duration of each test of sending and receiving shall be, as a rule, five minutes. | | * | | |
| | | | | |
| Knowledge of the practical operation and adjustment of radiotelegraph apparatus. | | | | * |
| | | | | |
| Ability to send correctly and to receive correctly by radiotelephone. | * | * | | * |
| Ability to send correctly and to receive correctly by radiotelephone except in the case provided for in 1.8 of Part B to this Appendix. | | | * | |
| | | | | |
| Knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio. | * | | * | |

| **The relevant certificate is issued to a candidate who has shown proof of the technical and professional knowledge and qualifications enumerated below, as applicable, and indicated by an asterisk (*) in the appropriate box** | **Radiocom-municat. Operator's General Certificate** | **1st-Class Radio telegraph Operator's Certificate** | **2nd-Class Radio-Telegraph Operator's Certificate** | **Radio-Telegraph Operator's Special Certificate** |
|---|---|---|---|---|
| Detailed knowledge of the Regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of the provisions of the Convention for the Safety of Life at Sea which relate to radio. | | * | | |
| | | | | |
| Knowledge of the Regulations applying to radiotelegraph communications and specifically of that part of those Regulations relating to the safety of life. | | | | * |
| | | | | |
| Sufficient knowledge of world geography, especially the principal shipping routes and the most important telecommunication routes. | * | * | * | |
| | | | | |
| Knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required. | * | | | |
| Sufficient knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required. | | * | | |
| If necessary, elementary knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Each administration shall decide for itself the language or languages required. | | | * | |

*B. Radiotelephone Operator's Certificates*

**2.7** The radiotelephone operator's general certificate is issued to candidates who have shown proof of the knowledge and professional qualifications enumerated below (see also paragraphs **1.2**, **1.3**, **1.6** and **1.7**):

*a)* a knowledge of the elementary principles of radiotelephony;

*b)* detailed knowledge of the practical operation and adjustment of radiotelephone apparatus;

*c)* ability to send correctly and to receive correctly by radiotelephone;

*d)* detailed knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.

**2.8** The restricted radiotelephone operator's certificate is issued to candidates who have given proof of the knowledge and professional qualifications enumerated below:

*a)* practical knowledge of radiotelephone operation and procedure;

*b)* ability to send correctly and to receive correctly by telephone;

*c)* general knowledge of the Regulations applying to radiotelephone communications and specifically of that part of those Regulations relating to the safety of life.

**2.9** For ship radiotelephone stations where the peak envelope power of the transmitter does not exceed 400 watts, each administration may itself fix these conditions for obtaining a restricted radiotelephone operator's certificate, provided that the operation of the transmitter requires only the use of simple external switching devices, excluding all manual adjustment of frequency determining elements, and that the stability of the frequencies is maintained by the transmitter itself within the limits of tolerance specified in AP **S2**. However, in fixing the conditions, administrations shall ensure that the operator has an adequate knowledge of radiotelephone operation and procedure, particularly as far as distress, urgency and safety are concerned. This in no way contravenes the provisions of paragraph **2.13**.

**2.10** Administrations in Region 1 do not issue certificates under paragraph **2.9**.

**2.11** A radiotelephone operator's certificate shall show whether it is a general certificate or a restricted certificate and, in the latter case, whether it has been issued in conformity with the provisions of paragraph **2.9**.

**2.12** In the maritime mobile service, a radiotelephone operator's restricted certificate shall show whether it is also limited as provided for in paragraph **1.5**.

**2.13** In order to meet special needs, special agreements between administrations may fix the conditions to be fulfilled in order to obtain a radiotelephone operator's certificate, intended to be used in radiotelephone stations complying with certain technical conditions and certain operating conditions. These agreements, if made, shall be on the condition that harmful interference to international services shall not result therefrom. These conditions and agreements shall be mentioned in the certificates issued to such operators.

## Section III. Class and Minimum Number of Operators

**3.1** In the public correspondence service, each government shall take the necessary steps to ensure that stations on board ships of its own nationality have personnel adequate to perform efficient service.

**3.2** The personnel of ship stations in the public correspondence service shall, having regard to the provisions of Part A of Appendix **S13**, include at least:

*a)* ship stations of the first category, except in the case provided for in paragraph **3.2** *e*): a chief operator holding a radiocommunication operator's general certificate or a first-class radiotelegraph operator's certificate;

*b)* ship stations of the second and third categories, except in the case provided for in paragraph **3.2** *e*): a chief operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

*c)* ship stations of the fourth category, except in the cases provided for in paragraphs **3.2** *d*) and **3.2** *e*): one operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

*d)* ship stations in which a radiotelegraph installation is provided but not prescribed by international agreements: one operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate, or a radiotelegraph operator's special certificate;

*e)* ship stations equipped with a radiotelephone installation only: one operator holding either a radiotelephone operator's certificate or a radiotelegraph operator's certificate.

# APPENDIX S14

## Phonetic Alphabet and Figure Code

(see Articles **S30**, **S57** and Appendix **S13**)

*(The contents of this Appendix have not been reproduced since no change of substance is recommended to the present Appendix 24.)*

APPENDIX S15

NOC

**Frequencies for Distress and Safety Communications for the GMDSS**

(see Article **S31**)

The frequencies for distress and safety communications for the GMDSS are given in Tables S15.1 and S15.2 for frequencies below and above 30 MHz respectively.

**ADD**

## Table S15.1. Frequencies below 30 MHz

| Frequency (in kHz) | Description of usage | Notes |
|---|---|---|
| 490 | MSI | The frequency 490 kHz will be used exclusively for maritime safety information (MSI) after full implementation of the GMDSS (see also Resolution 210 (Mob-87)). |
| 518 | MSI | The frequency 518 kHz is used exclusively by the international NAVTEX system. |
| *2 174.5 | NBDP-COM | |
| *2 182 | RTP-COM | The frequency 2 182 kHz uses class of emission J3E. See also No. S52.190 and Appendix S13. |
| *2 187.5 | DSC | |
| 3 023 | AERO-SAR | The aeronautical carrier (reference) frequencies 3 023 kHz and 5 680 kHz may be used for intercommunication between mobile stations engaged in coordinated search and rescue operations, and for communication between these stations and participating land stations, in accordance with the provisions of Appendix S27 (see Nos. S5.111 and S5.115). |
| *4 125 | RTP-COM | See also No. S52.222 and Appendix S13. The carrier frequency 4 125 kHz may be used by aircraft stations to communicate with stations of the maritime mobile service for distress and safety purposes, including search and rescue (see No. S30.11). |
| *4 177.5 | NBDP-COM | |
| *4 207.5 | DSC | |
| 4 209.5 | MSI | The frequency 4 209.5 kHz is exclusively used for NAVTEX-type transmissions (see Resolution [COM4-7]). |
| 4 210 | MSI-HF | |
| 5 680 | AERO-SAR | See note under 3 023 kHz above. |
| *6 215 | RTP-COM | See also No. S52.222 and Appendix S13. |
| *6 268 | NBDP-COM | |

**Legend**

**MSI** In the maritime mobile service, these frequencies are used exclusively for the transmission of Maritime Safety Information (MSI) (including meteorological and navigational warnings and urgent information) by coast stations to ships, by means of narrow band direct-printing telegraphy.

**NBDP-COM** These frequencies are used exclusively for distress and safety communications (traffic) using narrow-band direct-printing telegraphy.

**RTP-COM** These carrier frequencies are used for distress and safety communications (traffic) by radiotelephony.

**DSC** These frequencies are used exclusively for distress and safety calls using digital selective calling [in accordance with No. S32.5 (see Nos. S32.9, S33.11 and S33.34)]

**AERO-SAR** These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in Appendices S13 and S15 is prohibited.

(CONTINUED)

| Frequency (in kHz) | Description of usage | Notes |
|---|---|---|
| *6 312 | DSC | |
| 6 314 | MSI-HF | |
| *8 291 | RTP-COM | |
| *8 376.5 | NBDP-COM | |
| *8 414.5 | DSC | |
| 8 416.5 | MSI-HF | |
| *12 290 | RTP-COM | |
| *12 520 | NBDP-COM | |
| *12 577 | DSC | |
| 12 579 | MSI-HF | |
| *16 420 | RTP-COM | |
| *16 695 | NBDP-COM | |
| *16 804.5 | DSC | |
| 16 806.5 | MSI-HF | |
| 19 680.5 | MSI-HF | |
| 22 376 | MSI-HF | |
| 26 100.5 | MSI-HF | |

**Legend**

**MSI-HF** In the maritime mobile service, these frequencies are used exclusively for the transmission of high seas MSI by coast stations to ships, by means of narrow-band direct-printing telegraphy (see Resolution 333 (Mob-87)).

* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in Appendices S13 and S15 is prohibited.

## Table S15.2. Frequencies above 30 MHz (VHF / UHF)

| Frequency (in MHz) | Description of usage | Notes |
|---|---|---|
| *121.5 | AERO-SAR | The aeronautical emergency frequency 121.5 MHz is used for the purposes of distress and urgency for radiotelephony by stations of the aeronautical mobile service using frequencies in the band between 117.975 MHz and 137 MHz. This frequency may also be used for these purposes by survival craft stations. Emergency position-indicating radio beacons use the frequency 121.5 MHz as indicated in [Annex AP37A].<br><br>Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. **S5.111** and **S5.200**). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated. |
| 123.1 | AERO-SAR | The aeronautical auxiliary frequency 123.1 MHz, which is auxiliary to the aeronautical emergency frequency 121.5 MHz, is for use by stations of the aeronautical mobile service and by other mobile and land stations engaged in coordinated search and rescue operations (see also No. **S5.200**).<br><br>Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. **S5.111** and **S5.200**). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated. |
| 156.3 | VHF-CH06 | The frequency 156.3 MHz may be used for communication between ship stations and aircraft stations engaged in coordinated search and rescue operations. It may also be used by aircraft stations to communicate with ship stations for other safety purposes (see also Note g) in App.**S18**). |
| *156.525 | VHF-CH70 | The frequency 156.525 MHz is used in the maritime mobile service for distress and safety calls using digital selective calling (see also Nos. **S4.9, S5.227, S30.2** and **S30.3**). |
| 156.650 | VHF-CH13 | The frequency 156.650 MHz is used for ship-to-ship communications relating to the safety of navigation in accordance with Note p) in Appendix **S18**. |
| *156.8 | VHF-CH16 | The frequency 156.8 MHz is used for distress and safety communications by radiotelephony (see also Appendix **S13**). Additionally, the frequency 156.8 MHz may be used by aircraft stations for safety purposes only. |
| *406 - 406.1 | 406-EPIRB | This frequency band is used exclusively by satellite emergency position-indicating radio beacons in the Earth-to-space direction (see No. **S5.266**). |

**Legend**

**AERO-SAR** These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

**VHF-CH#** These VHF frequencies are used for distress and safety purposes. The channel number (CH#) refers to the VHF channel as listed in Appendix **S18**, which should also be consulted.

**SAT-COM** These frequency bands are available for distress and safety purposes in the maritime mobile-satellite service (see Notes).

* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in Appendices **S13** and **S15** is prohibited.

(CONTINUED)

| Frequency (in MHz) | Description of usage | Notes |
|---|---|---|
| 1 530 - 1 544 | SAT-COM | In addition to its availability for routine non-safety purposes, the band 1 530 - 1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. |
| *1 544 - 1 545 | D&S-OPS | Use of the band 1 544 - 1 545 MHz (space-to-Earth) is limited to distress and safety operations (see No. S5.356), including feeder links of satellites needed to relay the emissions of satellite emergency position-indicating radio beacons to earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations. |
| 1 626.5 - 1 645.5 | SAT-COM | In addition to its availability for routine non-safety purposes, the band 1 626.5 - 1 645.5 MHz is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. |
| *1 645.5 - 1 646.5 | D&S-OPS | Use of the band 1 645.5 - 1 646.5 MHz (Earth-to-space) is limited to distress and safety operations (see No. S5.375), including transmissions from satellite EPIRBs and relay of distress alerts received by satellites in low polar Earth orbits to geostationary satellites. |
| 9 200 - 9 500 | SARTS | This frequency band is used by radar transponders to facilitate search and rescue. |

| Legend |
|---|
| * Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in Appendices S13 and S15 is prohibited. |
| D&S-OPS The use of these bands is limited to distress and safety operations of satellite emergency position-indicating radio beacons (EPIRBs) |

## APPENDIX S16

**Documents with Which Stations on Board Ships and Aircraft Shall be Provided**

(see Articles **S42** and **S51**)

*(The contents of this Appendix have not been reproduced since no change of substance is recommended to the present Appendix 11.)*

## APPENDIX S17

**Frequencies and Channelling Arrangements in the High-Frequency Bands for the Maritime Mobile Service**

(see Article **S52**)

This Appendix contains two parts, the second of which is divided into five sections:

Part A - Table of Subdivided Bands
*(Present Appendix 31)*

Part B - Channelling Arrangements

Section I - Radiotelephony
*(Present Appendix 16)*

Section II - Narrow-Band Direct-Printing Telegraphy (Paired Frequencies)
*(Present Appendix 32)*

Section III - Narrow-Band Direct-Printing Telegraphy (Non-Paired Frequencies)
*(Present Appendix 33)*

Section IV - Morse Telegraphy (Calling)
*(Present Appendix 34)*

Section V - Morse Telegraphy (Working)
*(Present Appendix 35)*

*(The contents of these Appendices have not been reproduced since no changes of substance to the text are recommended.)*