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INTERNATIONAL TELECOMMUNICATION UNION

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# **FINAL ACTS**

**of the  
Regional Administrative Conference  
for the Planning  
of the Maritime Radionavigation  
Service (Radiobeacons)  
in the European Maritime Area**

**Geneva, 1985**

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Denmark (7)	Netherlands (Kingdom of the) (7)
Finland (7)	Norway (7)
France (6)	Spain (8, 9)
Germany (Federal Republic of) (7)	Portugal (1)
Ireland (7)	Sweden (7)
Israel (State of) (10)	Tunisia (3, 4)
Libya (Socialist People's Libyan Arab Jamahiriya) (3)	Turkey (7)
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## REGIONAL AGREEMENT

### Concerning the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area

(Geneva, 1985)

## PREAMBLE

The delegates of the following Members of the International Telecommunication Union:

*People's Democratic Republic of Algeria, Federal Republic of Germany, Austria, Belgium, People's Republic of Bulgaria, Republic of Cyprus, Denmark, Spain, Finland, France, Greece, Hungarian People's Republic, Ireland, State of Israel, Italy, Socialist People's Libyan Arab Jamahiriya, Republic of Malta, Kingdom of Morocco, Monaco, Norway, Kingdom of the Netherlands, People's Republic of Poland, Portugal, German Democratic Republic, Socialist Republic of Romania, United Kingdom of Great Britain and Northern Ireland, Sweden, Czechoslovak Socialist Republic, Tunisia, Turkey, Union of Soviet Socialist Republics, Socialist Federal Republic of Yugoslavia,*

meeting in Geneva for a Regional Administrative Radio Conference convened under the terms of Article 7 of the International Telecommunication Convention, Nairobi, 1982, have adopted subject to the approval of the competent authorities of their respective countries the following provisions relating to the maritime radionavigation service (radiobeacons) in the European Maritime Area.

## ARTICLE 1

### Definitions

For the purpose of this Agreement, the following terms shall have the meanings defined below:

- 1.1 *Union*: The International Telecommunication Union;
- 1.2 *Secretary-General*: The Secretary-General of the Union;
- 1.3 *IFRB*: The International Frequency Registration Board (also referred to as *the Board*);
- 1.4 *CCIR*: The International Radio Consultative Committee;
- 1.5 *Convention*: The International Telecommunication Convention, Nairobi, 1982;
- 1.6 *Radio Regulations*: The Radio Regulations, Geneva, 1979, as revised by WARC-MOB-83, annexed to the Convention;
- 1.7 *European Maritime Area*: The geographical area defined in No. 405 of the Radio Regulations;
- 1.8 *Agreement*: The whole of this Agreement including its Annexes and Appendices;
- 1.9 *Plan*: The Plan forming the Annex 1 to this Agreement
- 1.10 *Contracting Member*: Any Member of the Union which has approved or acceded to this Agreement;
- 1.11 *Administration*: Any governmental department or service responsible for discharging the obligations undertaken in the International Telecommunication Convention and the Radio Regulations;
- 1.12 *Assignment in conformity with the Agreement*: Any frequency assignment appearing in the Plan or any frequency assignment for which the procedure of Article 4 has been successfully applied.

## ARTICLE 2

### Frequency Bands

2.1 The provisions of this Agreement apply in the European Maritime Area to the band 283.5 - 315 kHz allocated under Article 8 of the Radio Regulations to the maritime radionavigation service (radiobeacons) on a primary basis.

These provisions also apply to frequency assignments to stations of the aeronautical radionavigation service to which the same frequency band is allocated on a permitted basis.

## ARTICLE 3

### Execution of this Agreement

3.1 The Contracting Members shall adopt, for their radiobeacon stations of the maritime radionavigation service operating in the European Maritime Area in the frequency band referred to in this Agreement, the characteristics specified in the Plan.

3.2 The Contracting Members shall not bring assignments complying with the Plan into use, modify the technical characteristics of stations specified in the Plan, or bring new stations into use, except under the conditions specified in Articles 4 and 5 of this Agreement.



3.3 When assigning frequencies to stations of the aeronautical radionavigation service, Contracting Members shall take account of the frequency assignments to radiobeacon stations of the maritime radionavigation service which are in conformity with this Agreement or for which the modification procedure contained in Article 4 has been initiated.

3.4 The Contracting Members shall endeavour to coordinate their efforts with a view to reducing any harmful interference that may result from the application of this Agreement.

## ARTICLE 4

### Procedure for Modifications to the Plan

#### SECTION A – GENERAL

4.1 When a Contracting Member proposes to make a modification to the Plan, that is:

- a) to modify the characteristics of a frequency assignment to a radiobeacon station of the maritime radionavigation service shown in the Plan, whether or not the station has been brought into use; *or*
- b) to bring into use an assignment to a radiobeacon station of the maritime radionavigation service not appearing in the Plan; *or*
- c) to modify the characteristics of a frequency assignment to a radiobeacon station of the maritime radionavigation service for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*
- d) to cancel a frequency assignment to a radiobeacon station of the maritime radionavigation service;

the following procedure shall be applied at the same time as the notification is made under the provisions of Article 12 of the Radio Regulations (see Article 5 of this Agreement).

#### SECTION B – PROCEDURE FOR MODIFYING THE CHARACTERISTICS OF AN ASSIGNMENT OR THE BRINGING INTO USE OF A NEW ASSIGNMENT

4.2 An administration proposing to modify the characteristics of an assignment or to bring a new assignment into use shall, either directly or through the IFRB, seek the agreement of all other administrations whose assignments may be affected.

4.3 For the purposes of this procedure, these other administrations shall be the administrations of Contracting Members which have:

- a) assignments in conformity with this Agreement whose service may be affected according to the criteria specified in Appendix 1 to Annex 3;
- b) assignments recorded in the Master International Frequency Register for stations of the aeronautical radionavigation service which may be affected according to the provisions of No. 1241 of the Radio Regulations together with the technical criteria contained in Appendix 1 to Annex 3.

4.4 An administration proposing to modify the characteristics of an assignment or to bring a new assignment into use may at any time seek the agreement of any other Contracting Member which it has identified following the application of Appendix 1 to Annex 3 as having an assignment in the Plan which may be affected by the proposed modification to the Plan. It shall, in any case, so inform the Board not earlier than 90 days before the date of bringing into use and shall provide the Board with the characteristics listed in Appendix 1 to the Radio Regulations, and the names of the administrations with which it considers agreement should be sought and of those with which agreement has been reached. The IFRB shall consider this information as a notification in accordance with Article 12 of the Radio Regulations. Publication in Part I of the weekly circular shall at the same time constitute information to the Contracting Members on the proposed modification.

4.5 When the Board reaches an unfavourable finding under No. 1241 of the Radio Regulations in relation to frequency assignments recorded in the Master Register on behalf of non-Contracting Members, it shall notify the administration proposing the modification and shall make recommendations with a view to reaching a satisfactory solution to the problem.

4.6 When the Board reaches a favourable finding under No. 1241 of the Radio Regulations in relation to frequency assignments recorded in the Master Register on behalf of non-Contracting Members, it shall examine the modification proposed in relation to assignments:

- in conformity with this Agreement;
- published in Part I of the weekly circular in accordance with paragraph 4.4 above;
- of the aeronautical radionavigation service recorded in the Master Register on behalf of Contracting Members.

The Board shall inform the administration proposing the modification of the results of its examination.

4.7 When the administration proposing the modification is informed of the results of the Board's examination, it shall endeavour to seek the agreement of the other administrations as soon as possible and in any case, before bringing the assignment into use, it shall inform the Board of the results of its efforts.

4.8 Following the examination carried out in accordance with paragraph 4.6 above, the Board shall record the assignment in the Master Register in accordance with Nos. 1311 to 1313 of the Radio Regulations indicating the names of those administrations whose agreement has to be obtained.

4.9 When an administration confirms that its assignment has been brought into use, it shall inform the Board of the names of administrations with which agreement has been reached. When the Board finds that the agreement of an administration has not been obtained, it shall request the notifying administration to delete its entry from the Master Register. If this administration insists, its assignment shall be retained in the Master Register subject to the application of the procedure of No. 1255 of the Radio Regulations; the period of two months specified in No. 1259 of the Radio Regulations shall start when the assignment of the Member country whose agreement is required is brought into use.

4.10 When the Board finds that the agreement of Contracting Members is not required or when the Board is informed that the required agreement has been obtained, it shall update the master copy of the Plan.

#### SECTION C – CANCELLATION OF ASSIGNMENTS

4.11 An administration proposing to cancel an assignment in the Plan, whether or not as a result of a modification (for instance a change of frequency), shall immediately so inform the IFRB. The Board shall update the master copy of the Plan accordingly.

#### SECTION D – MAINTENANCE AND PUBLICATION OF THE PLAN

4.12 The IFRB shall maintain an up-to-date master copy of the Plan and its appendices, taking account of the application of the procedure specified in this Article; to this end the IFRB shall periodically prepare recapitulative documents listing all amendments made to the Plan as a result of modifications made in accordance with the procedure of this Article, the addition of new assignments in conformity with this Agreement, and any cancellations of which the Board has been notified.

4.13 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form as and when circumstances justify and in any case every five years.

## ARTICLE 5

### Notification of Frequency Assignments

5.1 Whenever an administration intends to bring into use an assignment in conformity with this Agreement, it shall notify the assignment to the IFRB in accordance with the provisions of Article 12 of the Radio Regulations.

5.2 Notices of frequency assignments in conformity with this Agreement shall not be examined by the Board under No. 1241 with respect to frequency assignments recorded in the Master Register on behalf of Contracting Members for stations of primary or permitted services of administrations, Parties to this Agreement.

5.3 In relations between Contracting Members, assignments thus brought into service and entered into the Master Register will have the same status, irrespective of the date on which they are brought into service.

## ARTICLE 6

### Procedure Applicable to New Assignments of the Aeronautical Radionavigation Service

6.1 In order to permit the compatible development of the aeronautical radionavigation service in the band 283.5 - 315 kHz, the IFRB shall examine in accordance with No. 1245 of the Radio Regulations the frequency assignments of this service notified by Contracting Members. To this effect the following provisions shall be applied.

6.2 The Board shall examine the frequency assignment with respect to the probability of harmful interference to the service provided or to be provided by a station for which a frequency assignment:

- a) is already recorded in the Master Register and bears a date in Column 2a; *or*
- b) is in conformity with No. 1240 of the Radio Regulations and is recorded in the Master Register with a date in Column 2b, but has not, in fact, caused harmful interference to any frequency assignment with a date in Column 2a or to any assignment in conformity with No. 1240 with an earlier date in Column 2b;
- c) is in conformity with this Agreement but has not yet been notified in accordance with Article 4;
- d) was published in Part I of the weekly circular in accordance with paragraph 4.4 (Article 4).

6.3 In the event of the finding being unfavourable with respect to a frequency assignment described in paragraphs 6.2 c) or 6.2 d) above, if the administration resubmits the notice under No. 1255 of the Radio Regulations the period of two months specified in No. 1259 shall not start until the assignment which gave rise to the unfavourable finding is brought into service.

6.4 For the purpose of these examinations, the IFRB's Technical Standards shall apply.

## ARTICLE 7

### Special Arrangements

7.1 In addition to the procedure provided for in Article 4 of this Agreement and to facilitate its application with a view to improving the utilization of the Plan, Contracting Members may conclude special arrangements in accordance with the relevant provisions of the Convention and of the Radio Regulations.

## ARTICLE 8

### Scope of Application of this Agreement

8.1 This Agreement shall bind Contracting Members in their relations with one another but shall not bind those Members with respect to non-Contracting countries.

8.2 If a Contracting Member makes reservations with regard to any provision of this Agreement, other Contracting Members shall be free to disregard that provision in their relations with the Contracting Member which has made such reservations.

## ARTICLE 9

### Approval of this Agreement

9.1 This Agreement shall be subject to approval by the competent authorities of the countries on behalf of which the Agreement was signed. Instruments of approval shall be deposited, in as short a time as possible, with the Secretary-General, who shall inform all the Members of the Union.

## ARTICLE 10

### Accession to this Agreement

10.1 Any Member of the Union in the European Maritime Area which has not signed this Agreement may accede thereto at any time. Such accession shall extend to the Plan as it stands at the time of the accession and shall be made without reservation. The instruments of accession shall be deposited with the Secretary-General who shall promptly inform all the Members of the Union. After the date of entry into force of this Agreement, for each Member acceding to the Agreement it shall enter into force on the date of the deposit by such a Member of its instrument of accession.

## ARTICLE 11

### Termination of Participation in this Agreement

11.1 Any Contracting Member shall have the right at any time to terminate its participation in this Agreement by a notification sent to the Secretary-General, who shall inform all the Members of the Union.

11.2 Such termination of participation shall take effect after a period of one year from the date of receipt by the Secretary-General of the said notification.

11.3 On the date on which the termination of participation becomes effective, the IFRB shall delete from the Plan the assignments entered in the name of the Member concerned.

## ARTICLE 12

### Revision of the Agreement

12.1 No revision of this Agreement shall be undertaken except by a competent administrative radio conference of the Members of the Union in the European Maritime Area, convened in accordance with the procedure laid down in the Convention.

ARTICLE 13

**Abrogation and Replacement of the Regional Arrangement  
Concerning Maritime Radiobeacons in the European Area  
of Region 1 (Paris, 1951)**

13.1 This Agreement abrogates and replaces the Regional Arrangement Concerning Maritime Radiobeacons in the European Area of Region 1 (Paris, 1951).

ARTICLE 14

**Entry into Force of this Agreement**

14.1 This Agreement shall enter into force on 1 April 1992 at 0001 hours UTC.

IN WITNESS WHEREOF the delegations of Members of the Union mentioned above have, on behalf of their respective competent authorities, signed this Agreement in a single copy in the Arabic, English, French, Russian and Spanish languages in which, in case of dispute, the French text shall be authentic. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified copy to each Member in the European Maritime Area.

Done at Geneva, 13 March, 1985.

**For the People's Democratic Republic of Algeria:**

N. BOUHIRED  
A. HAMOUI  
M. SAIS  
M. KAHLAL

**In the name of the Federal Republic of Germany:**

FRIEDRICH G. WIEFELSPÜTZ  
EBERHARD GEORGE

**For Austria:**

ERNST STEINER

**For Belgium:**

A. L. I. MOERMAN

**For the People's Republic of Bulgaria:**

D. STAMATOV

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ANDREAS XENOPHONTOS

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ALFRED FALZON  
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**For the Kingdom of Morocco:**

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**For Norway:**

THORMOD BØE  
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**For the Kingdom of the Netherlands:**

M. BOORSMA  
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**For the People's Republic of Poland:**

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FERNÃO MANUEL HOMEM DE GOUVEIA  
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CONSTANTIN CEAUȘESCU

**For the United Kingdom of Great Britain and Northern Ireland:**

MICHAEL PETER DAVIES  
LESLIE WILLIAM BARCLAY  
MICHAEL JOHN BATES

**For Sweden:**

KRISTER BJÖRNSJÖ

**For the Czechoslovak Socialist Republic:**

BUKOVIANSKY GREGOR

**For Tunisia:**

M. SALEM BCHINI  
M. HABIB BOUFARES

**For Turkey:**

IBRAHIM GÖKSEL  
HÜSEYİN GÜLER

**For the Union of Soviet Socialist Republics:**

B. CHIRKOV

**For the Socialist Federal Republic of Yugoslavia:**

Dr. DRAŠKO MARIN

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ANNEX 1

**Frequency Assignment Plan for Stations of the Radionavigation  
Service (Radiobeacons) for the European Maritime Area  
in the Band 283.5 - 315 kHz**

<i>Column</i>	<i>Plan column headings</i>
1	<i>Assigned frequency (kHz)</i>
2	<i>Channel number</i>
3	<i>Country symbol</i>
4	<i>Transmitting station name</i>
5	<i>Symbols of the country or geographical area in which the transmitting station is located (see Table 1 of the Preface to the International Frequency List)</i>
6	<i>Longitude and latitude (in degrees and minutes) of the transmitting station</i>
7	<i>Radius (km) of the circular service area (considered for ground-wave propagation conditions)<sup>1</sup></i>
8	<i>Nature of service</i>
9	<i>Necessary bandwidth and class of emission<sup>2</sup></i>
10	<i>Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)<sup>3</sup> (value calculated on the basis of the minimum field strength to be protected and the service range for ground-wave propagation conditions)</i>
11	<i>Antenna characteristics (ND)</i>
12	<i>Regular hours of operation (UTC) of the frequency assignment</i>
13	<i>Remarks</i>

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<sup>1</sup> Sky-wave propagation occurs at night and this will cause bearing errors at long ranges. Thus the night-time service range should be adjusted, where necessary, to give a maximum range not exceeding 150 nautical miles (280 km). With this limitation it is not necessary to consider the sky-wave field strength for planning purposes.

<sup>2</sup> The Plan was established on the basis of class of emission A1A. However, the technical parameters also provide for composite emissions using both A1A and F1B.

<sup>3</sup> The type of power to be notified under Article 12 of the Radio Regulations shall be the peak envelope power, determined by the A1A emission of the primary function of the radiobeacon.

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Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
284.00	1	ALG	CAP DE FER	ALG	007E10 37N04	280	RC	100HA1A	9	ND	0000 2359	
284.00	1	E	PNT SILLA	E	004W24 43N24	90	RC	100HA1A	-6	ND	0000 2359	
284.00	1	F	GATTEVILLE PHARE	F	001W16 49N42	130	RC	100HA1A	-3	ND	0000 2359	
284.00	1	F	PNT DE GRAVE LH	F	001W04 45N34	10	RC	100HA1A	-26	ND	0000 2359	
284.00	1	G	PORTLAND BILL LSTN	G	002W27 50N30	90	RC	100HA1A	-6	ND	0000 2359	
284.00	1	G	ST CATHERINES POINT	G	001W17 50N34	90	RC	100HA1A	-6	ND	0000 2359	
284.00	1	I	CAPO VATICANO	I	015E49 38N37	130	RC	100HA1A	1	ND	0000 2359	
284.00	1	IRL	KISH BANK LSTN	IRL	005W55 53N19	20	RC	100HA1A	-22	ND	0000 2359	
284.00	1	S	GOTSKA SANDOEN	S	019E12 58N24	100	RC	100HA1A	-5	ND	0000 2359	
284.00	1	S	NORDVALEN	S	020E47 63N32	20	RC	100HA1A	-22	ND	0000 2359	
284.50	2	E	C MACHICHACO	E	002W45 43N27	180	RC	100HA1A	0	ND	0000 2359	
284.50	2	FNL	HARMAJA	FNL	024E59 60N06	90	RC	100HA1A	-6	ND	0000 2359	
284.50	2	G	CROMER LSTN	G	001E19 52N55	90	RC	100HA1A	-6	ND	0000 2359	
284.50	2	G	DUDGEON LSTN	G	001E13 53N15	90	RC	100HA1A	-6	ND	0000 2359	
284.50	2	G	SMITHS KNOLL LSTN	G	002E18 52N43	90	RC	100HA1A	-6	ND	0000 2359	
284.50	2	YUG	BAR	YUG	019E09 42N01	10	RC	100HA1A	-22	ND	0000 2359	
285.00	3	BEL	NIEUWPOORT PHARE	BEL	002E43 51N09	10	RC	100HA1A	-26	ND	0000 2359	
285.00	3	E	C DE LA NAO	E	000E14 38N44	90	RC	100HA1A	-2	ND	0000 2359	
285.00	3	G	FIFE NESS	G	002W35 56N17	90	RC	100HA1A	-6	ND	0000 2359	
285.00	3	G	GIRDLE NESS	G	002W03 57N08	90	RC	100HA1A	-6	ND	0000 2359	
285.00	3	NOR	SLAATTEROEY	NOR	005E04 59N54	20	RC	100HA1A	-22	ND	0000 2359	
285.00	3	S	SIMPNAESKLUBB	S	019E05 59N54	60	RC	100HA1A	-10	ND	0000 2359	
286.00	5	G	SKERRIES	G	004W36 53N25	90	RC	100HA1A	-6	ND	0000 2359	
286.00	5	IRL	ROCKABILL LSTN	IRL	006W00 53N36	90	RC	100HA1A	-6	ND	0000 2359	
286.00	5	IRL	WICKLOW HEAD LSTN	IRL	006W00 52N58	130	RC	100HA1A	-3	ND	0000 2359	
286.00	5	LBY	TOBRUCK	LBY	024E00 32N02	110	RC	100HA1A	0	ND	0000 2359	
286.00	5	NOR	UTVAER	NOR	004E30 61N02	20	RC	100HA1A	-22	ND	0000 2359	
286.50	6	E	CALA FIGUERA	E	002E31 39N27	90	RC	100HA1A	-2	ND	0000 2359	
286.50	6	F	FREHEL PHARE	F	002W19 48N41	40	RC	100HA1A	-15	ND	0000 2359	
286.50	6	F	LA CHIAPPA PHARE	F	009E22 41N36	180	RC	100HA1A	4	ND	0000 2359	
286.50	6	FNL	NORRSKAR	FNL	020E36 63N14	90	RC	100HA1A	-6	ND	0000 2359	
286.50	6	G	ALTACARRY HEAD LSTN	G	006W10 55N18	90	RC	100HA1A	-6	ND	0000 2359	
286.50	6	G	LA CORBIERE	G	002W14 49N10	40	RC	100HA1A	-15	ND	0000 2359	
286.50	6	G	PLADDA	G	005W07 55N25	90	RC	100HA1A	-6	ND	0000 2359	
286.50	6	G	RINNS OF ISLAY	G	006W31 55N40	130	RC	100HA1A	-3	ND	0000 2359	
286.50	6	I	COZZO SPADARO	I	015E08 36N41	130	RC	100HA1A	1	ND	0000 2359	
286.50	6	URS	DAUGAVGRIVA	URS	024E01 57N04	60	RC	100HA1A	-10	ND	0000 2359	
286.50	6	YUG	BAR	YUG	019E06 42N06	180	RC	100HA1A	4	ND	0000 2359	
287.00	7	ALG	CAP CAXINE	ALG	002E57 36N48	370	RC	100HA1A	13	ND	0000 2359	
287.00	7	LBY	KHOMS	LBY	014E15 32N48	20	RC	100HA1A	-18	ND	0000 2359	

Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
287.00	7	MRC	EL HANK	MRC	007W29 33N37	200	RC	100HA1A	5	ND	0000 2359	
287.50	8	ALG	ILE RACHGOUN	ALG	001W28 35N19	90	RC	100HA1A	-2	ND	0000 2359	
287.50	8	DDR	STUBBENKAMMER	DDR	013E38 54N35	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	F	ALPRECH PHARE	F	001E34 50N42	40	RC	100HA1A	-15	ND	0000 2359	
287.50	8	F	LA PALLICE	F	001W14 46N10	10	RC	100HA1A	-26	ND	0000 2359	
287.50	8	F	ROSEDO PHARE	F	003W00 48N51	20	RC	100HA1A	-22	ND	0000 2359	
287.50	8	F	SETE MT S CLAIR LH	F	003E41 43N24	100	RC	100HA1A	-5	ND	0000 2359	
287.50	8	G	DUNGENESS LSTN	G	000E58 50N54	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	G	HARTLAND POINT LSTN	G	004W31 51N01	10	RC	100HA1A	-26	ND	0000 2359	
287.50	8	I	SANTA MARIA DI LEUCA	I	018E22 39N48	180	RC	100HA1A	4	ND	0000 2359	
287.50	8	NOR	FAERDER	NOR	010E31 59N01	130	RC	100HA1A	-3	ND	0000 2359	
287.50	8	POL	JAROSLAWIEC	POL	016E33 54N33	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	POL	KOLOBRZEG	POL	015E33 54N11	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	POL	LEBA	POL	017E33 54N46	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	POL	ROZEWIE	POL	018E20 54N50	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	POL	SWINOUJSCIE	POL	014E17 53N55	90	RC	100HA1A	-6	ND	0000 2359	
287.50	8	POR	BERLENGA	POR	009W30 39N25	370	RC	100HA1A	13	ND	0000 2359	
287.50	8	POR	C CARVOEIRO	POR	009W24 39N22	90	RC	100HA1A	-2	ND	0000 2359	
287.50	8	POR	C MONDEGO	POR	008W54 40N11	90	RC	100HA1A	-2	ND	0000 2359	
287.50	8	S	BRAEMOEN	S	017E45 62N13	100	RC	100HA1A	-5	ND	0000 2359	
288.00	9	BEL	ZEEBRUGGEPHARE	BEL	003E12 51N20	10	RC	100HA1A	-26	ND	0000 2359	
288.00	9	DNK	SJAEELLANOS REV	DNK	011E12 56N06	90	RC	100HA1A	-6	ND	0000 2359	
288.00	9	E	ADRA	E	003W02 36N45	90	RC	100HA1A	-2	ND	0000 2359	
288.00	9	FNL	AJOS	FNL	024E35 65N40	90	RC	100HA1A	-6	ND	0000 2359	
288.00	9	FNL	UTO	FNL	021E22 59N47	90	RC	100HA1A	-6	ND	0000 2359	
288.00	9	NOR	SKLINNA	NOR	010E59 65N12	180	RC	100HA1A	0	ND	0000 2359	
288.00	9	NOR	VARDOE	NOR	031E09 70N23	130	RC	100HA1A	-3	ND	0000 2359	
288.50	10	ALG	CAP DE GARDE	ALG	007E47 36N58	90	RC	100HA1A	-2	ND	0000 2359	
288.50	10	BUL	NOS KALIAKRA	BUL	028E30 43N21	100	RC	100HA1A	-5	ND	0000 2359	
288.50	10	D	ROTE KLIFF	D	008E21 54N57	90	RC	100HA1A	-6	ND	0000 2359	
288.50	10	E	C FINISTERRE	E	009W16 42N53	180	RC	100HA1A	4	ND	0000 2359	
288.50	10	E	C SALOU	E	001E10 41N03	90	RC	100HA1A	-2	ND	0000 2359	
288.50	10	F	COMBRIT PHARE	F	004W07 47N52	40	RC	100HA1A	-15	ND	0000 2359	
288.50	10	F	LA REVELLATA PHARE	F	008E44 42N35	180	RC	100HA1A	4	ND	0000 2359	
288.50	10	G	CHICHESTER BAR	G	000W56 50N45	20	RC	100HA1A	-22	ND	0000 2359	
288.50	10	GRC	THESSALONIKI	GRC	022E57 40N36	20	RC	100HA1A	-18	ND	0000 2359	
288.50	10	S	OELANDS SOEDRA GRUND	S	016E41 56N04	130	RC	100HA1A	-3	ND	0000 2359	
288.50	10	S	SYDOSTBROTEN	S	020E11 63N20	80	RC	100HA1A	-7	ND	0000 2359	
288.50	10	TUN	RAS TURGENESS	TUN	011E02 33N49	100	RC	100HA1A	-1	ND	0000 2359	
289.00	11	D	MARIENLEUCHTE	D	011E14 54N30	90	RC	100HA1A	-6	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
289.00	11	E	MESA DE ROLDAN	E	001W54 36N56	90	RC	100HA1A	-2	ND	0000 2359	
289.00	11	F	C S MATHIEU PHARE	F	004W46 48N20	100	RC	100HA1A	-5	ND	0000 2359	
289.00	11	G	KINNAIRD HEAD	G	002W00 57N42	180	RC	100HA1A	0	ND	0000 2359	
289.00	11	G	STROMA	G	003W07 58N42	90	RC	100HA1A	-6	ND	0000 2359	
289.00	11	G	SUMBURGH HEAD	G	001W16 59N51	130	RC	100HA1A	-3	ND	0000 2359	
289.00	11	SYR	HASSAKEH	SYR	040E45 36N30	80	RC	100HA1A	-3	ND	0000 2359	
289.00	11	TUR	FENERBAHCE	TUR	029E01 40N58	180	RC	100HA1A	4	ND	0000 2359	
289.00	11	TUR	MARMARA EREGLISI	TUR	027E57 40N58	180	RC	100HA1A	4	ND	0000 2359	
289.50	12	F	I DE SEIN PHARE	F	004W52 48N03	130	RC	100HA1A	-3	ND	0000 2359	
289.50	12	G	ROUND ISLAND LSTN	G	006W19 49N58	370	RC	100HA1A	9	ND	0000 2359	
289.50	12	I	PUNTA CARENA	I	014E12 40N32	180	RC	100HA1A	4	ND	0000 2359	
289.50	12	IRL	MIZEN HEAD LSTN	IRL	009W49 51N27	370	RC	100HA1A	9	ND	0000 2359	
289.50	12	LBY	DERNA	LBY	022E40 32N46	180	RC	100HA1A	4	ND	0000 2359	
289.50	12	S	LANDSORT	S	017E52 58N44	100	RC	100HA1A	-5	ND	0000 2359	
289.50	12	TUN	MAHDIA	TUN	009E12 35N51	100	RC	100HA1A	-1	ND	0000 2359	
290.00	13	DNK	STEVNS	DNK	012E28 55N18	90	RC	100HA1A	-6	ND	0000 2359	
290.00	13	F	PT EN BESSIN PHARE	F	000W46 49N21	10	RC	100HA1A	-26	ND	0000 2359	
290.00	13	FNL	KYLMAPIHLAJA	FNL	021E18 61N09	90	RC	100HA1A	-6	ND	0000 2359	
290.00	13	ISL	MALARRIF	ISL	023W48 64N44	160	RC	100HA1A	-1	ND	0000 2359	
290.00	13	POR	AVEIRO	POR	008W45 40N38	90	RC	100HA1A	-2	ND	0000 2359	
290.00	13	POR	LECA	POR	008W43 41N12	180	RC	100HA1A	4	ND	0000 2359	
290.00	13	POR	MONTEDOR	POR	008W52 41N45	90	RC	100HA1A	-2	ND	0000 2359	
290.50	14	E	C VILLANO	E	009W13 43N10	180	RC	100HA1A	0	ND	0000 2359	
290.50	14	F	LE PILIER PHARE	F	002W22 47N03	20	RC	100HA1A	-22	ND	0000 2359	
290.50	14	G	CHANNEL LSTN	G	002W53 49N54	20	RC	100HA1A	-22	ND	0000 2359	
290.50	14	NOR	GRIP	NOR	007E36 63N14	90	RC	100HA1A	-6	ND	0000 2359	
290.50	14	S	HEMSOE	S	018E08 62N43	120	RC	100HA1A	-4	ND	0000 2359	
290.50	14	S	KULLEN	S	012E27 56N18	100	RC	100HA1A	-5	ND	0000 2359	
290.50	14	S	VISBY	S	018E17 57N38	20	RC	100HA1A	-22	ND	0000 2359	
291.00	15	DNK	HIRTSHALS	DNK	009E57 57N35	90	RC	100HA1A	-6	ND	0000 2359	
291.00	15	DNK	HIRTSHALS HAVN	DNK	009E58 57N36	90	RC	100HA1A	-6	ND	0000 2359	
291.00	15	E	C SAN SEBASTIAN	E	003E12 41N53	90	RC	100HA1A	-2	ND	0000 2359	
291.00	15	I	CAPO FERRO	I	009E31 41N09	130	RC	100HA1A	1	ND	0000 2359	
291.00	15	POR	ARNEL	AZR	025W08 37N49	180	RC	100HA1A	4	ND	0000 2359	
291.00	15	POR	CONTENDAS	AZR	027W05 38N39	180	RC	100HA1A	4	ND	0000 2359	
291.00	15	POR	GONZALO VELHO	AZR	025W01 36N57	370	RC	100HA1A	13	ND	0000 2359	
291.50	16	ALG	CAP MATIFOU	ALG	003E14 36N48	90	RC	100HA1A	-2	ND	0000 2359	
291.50	16	G	SOUTH ROCK LSTN	G	005W22 54N24	90	RC	100HA1A	-6	ND	0000 2359	
291.50	16	ISL	GOELTUR	ISL	023W34 66N10	160	RC	100HA1A	-1	ND	0000 2359	
291.50	16	NOR	GEITUNGANE	NOR	005E14 59N07	90	RC	100HA1A	-6	ND	0000 2359	

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1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
291.50	16	NOR	TORSVAAG	NOR	019E30 70N14	90	RC	100HA1A	-6	ND	0000 2359	
291.50	16	S	FARSTUGRUNDEN	S	022E45 65N20	100	RC	100HA1A	-5	ND	0000 2359	
291.50	16	TUR	BAFRA BURNU	TUR	035E56 41N43	180	RC	100HA1A	4	ND	0000 2359	
291.50	16	TUR	KEREMPE BURNU	TUR	033E20 42N01	180	RC	100HA1A	4	ND	0000 2359	
291.50	16	TUR	SINOP INCEBURUN	TUR	034E56 42N06	180	RC	100HA1A	4	ND	0000 2359	
291.50	16	TUR	YASUN BURNU	TUR	037E41 41N08	180	RC	100HA1A	4	ND	0000 2359	
291.50	16	URS	ABRAMOVSKIY	URS	043E16 66N25	50	RC	100HA1A	-11	ND	0000 2359	
291.50	16	URS	GULJAEVSKOII KOSCHKI	URS	055E32 68N54	20	RC	100HA1A	-22	ND	0000 2359	
291.50	16	URS	MERSRAGS	URS	023E07 57N22	30	RC	100HA1A	-19	ND	0000 2359	
292.00	17	CYP	PERA BEACON	CYP	033E17 35N03	200	RC	100HA1A	5	ND	0000 2359	
292.00	17	E	MAHON	E	004E18 39N52	180	RC	100HA1A	4	ND	0000 2359	
292.00	17	F	LA COUBRE	F	001W14 45N42	180	RC	100HA1A	0	ND	0000 2359	
292.00	17	G	BRESSAY	G	001W07 60N07	90	RC	100HA1A	-6	ND	0000 2359	
292.00	17	G	MUCKLE FLUGGA	G	000W53 60N51	280	RC	100HA1A	5	ND	0000 2359	
292.00	17	G	NORTH RONALDSAY	G	002W23 59N23	180	RC	100HA1A	0	ND	0000 2359	
292.00	17	I	SAN VITO LO CAPO	I	012E44 38N11	180	RC	100HA1A	4	ND	0000 2359	
292.50	18	F	BY LH LE HAVRE	F	000W09 49N32	40	RC	100HA1A	-15	ND	0000 2359	
292.50	18	MLT	MALTA RADIO	MLT	014E24 35N52	380	RC	100HA1A	14	ND	0000 2359	
292.50	18	ROU	CONSTANTA	ROU	028E38 44N10	180	RC	100HA1A	0	ND	0000 2359	
292.50	18	TUR	TEKIR FENERI	TUR	027E22 36N41	180	RC	100HA1A	4	ND	0000 2359	
292.50	18	YUG	SPLIT	YUG	016E29 43N30	10	RC	100HA1A	-26	ND	0000 2359	
293.00	19	BUL	NOS EMINE	BUL	027E54 42N41	100	RC	100HA1A	-1	ND	0000 2359	
293.00	19	E	SENOCOZULUA	E	001W56 43N20	90	RC	100HA1A	-6	ND	0000 2359	
293.00	19	NOR	SVINOEY	NOR	005E16 62N19	180	RC	100HA1A	0	ND	0000 2359	
293.00	19	POR	ILHEU DE CIMA	MDR	016W17 33N03	370	RC	100HA1A	13	ND	0000 2359	
293.00	19	POR	PONTA DO PARGO	MDR	017W16 32N49	370	RC	100HA1A	13	ND	0000 2359	
293.00	19	POR	SELVAGEM	MDR	015W52 30N09	370	RC	100HA1A	13	ND	0000 2359	
293.50	20	ALG	CAP IVI	ALG	000E13 36N06	90	RC	100HA1A	-2	ND	0000 2359	
293.50	20	D	GROSSER VOGELSAND	D	008E29 54N00	90	RC	100HA1A	-6	ND	0000 2359	
293.50	20	E	C SILLEIRO	E	008W54 42N06	180	RC	100HA1A	4	ND	0000 2359	
293.50	20	G	BARDSEY LSTN	G	004W47 52N44	90	RC	100HA1A	-6	ND	0000 2359	
293.50	20	G	SOUTH BISHOP LSTN	G	005W24 51N51	90	RC	100HA1A	-6	ND	0000 2359	
293.50	20	IRL	TUSKAR ROCK LSTN	IRL	006W12 52N12	90	RC	100HA1A	-6	ND	0000 2359	
293.50	20	S	HAETTEBERGET	S	011E28 57N52	100	RC	100HA1A	-5	ND	0000 2359	
294.00	21	D	BORKUMRIFF	D	006E22 53N47	40	RC	100HA1A	-15	ND	0000 2359	
294.00	21	DNK	ANHOLT KNOB	DNK	011E53 56N45	90	RC	100HA1A	-6	ND	0000 2359	
294.00	21	E	FAVARITX	E	004E16 40N00	90	RC	100HA1A	-2	ND	0000 2359	
294.00	21	F	BY LH DUNKERQUE	F	001E52 51N03	20	RC	100HA1A	-22	ND	0000 2359	
294.00	21	F	LAVEZZI PHARE	F	009E16 41N20	60	RC	100HA1A	-6	ND	0000 2359	
294.00	21	I	AUGUSTA DROMOGIGGIA	I	015E09 37N12	130	RC	100HA1A	1	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
294.00	21	JOR	AQABA RADIO	JOR	034E59 29N33	300	RC	100HA1A	10	ND	0000 2359	
294.00	21	LBY	MESURATA	LBY	015E13 32N22	90	RC	100HA1A	-2	ND	0000 2359	
294.00	21	NOR	LANDEGODE	NOR	014E22 67N26	20	RC	100HA1A	-22	ND	0000 2359	
294.00	21	S	BJUROEKLUBB	S	021E35 64N29	130	RC	100HA1A	-3	ND	0000 2359	
294.00	21	YUG	VELI RAT	YUG	014E49 44N09	180	RC	100HA1A	0	ND	0000 2359	
294.50	22	ALB	DURRES NAVIGATION	ALB	019E26 41N27	100	RC	100HA1A	-1	ND	0000 2359	
294.50	22	G	SUNK LSTN	G	001E35 51N51	20	RC	100HA1A	-22	ND	0000 2359	
294.50	22	NOR	SLETNES	NOR	028E13 71N05	90	RC	100HA1A	-6	ND	0000 2359	
294.50	22	URS	ZMEINYY OSTROV	UKR	030E12 45N15	180	RC	100HA1A	0	ND	0000 2359	
294.50	22	URS	CHESHSKIY	URS	048E36 67N55	280	RC	100HA1A	5	ND	0000 2359	
294.50	22	URS	KAYBOLOYO	URS	028E02 59N44	130	RC	100HA1A	-3	ND	0000 2359	
294.50	22	URS	KHODOVARIKHA	URS	053E46 68N56	280	RC	100HA1A	5	ND	0000 2359	
294.50	22	URS	KOLGUYEVSKIY	URS	049E07 69N30	280	RC	100HA1A	5	ND	0000 2359	
294.50	22	URS	MATVEEV	URS	058E30 69N28	150	RC	100HA1A	-2	ND	0000 2359	
294.50	22	URS	MOKHNI	URS	025E48 59N41	130	RC	100HA1A	-3	ND	0000 2359	
294.50	22	URS	NAYSSAAR	URS	024E31 59N36	130	RC	100HA1A	-3	ND	0000 2359	
294.50	22	URS	PAKRI	URS	024E02 59N23	150	RC	100HA1A	-2	ND	0000 2359	
294.50	22	URS	UZNY GOGLAND	URS	027E01 60N01	90	RC	100HA1A	-6	ND	0000 2359	
295.00	23	F	LA GAROUBE PHARE	F	007E08 43N34	180	RC	100HA1A	0	ND	0000 2359	
295.00	23	FNL	MARJANIEMI	FNL	024E34 65N02	90	RC	100HA1A	-6	ND	0000 2359	
295.00	23	G	BUTT OF LEWIS	G	006W16 58N31	270	RC	100HA1A	5	ND	0000 2359	
295.00	23	G	CAPE WRATH	G	005W00 58N38	90	RC	100HA1A	-6	ND	0000 2359	
295.00	23	G	HUMBER LSTN	G	000E21 53N36	10	RC	100HA1A	-26	ND	0000 2359	
295.00	23	G	NEWHAVEN	G	000W03 50N46	20	RC	100HA1A	-22	ND	0000 2359	
295.00	23	G	SULE SKERRY	G	004W24 59N05	180	RC	100HA1A	0	ND	0000 2359	
295.00	23	NOR	BUHOLMSRAASA	NOR	010E27 64N24	40	RC	100HA1A	-15	ND	0000 2359	
295.00	23	S	FAAROE	S	019E21 57N58	100	RC	100HA1A	-5	ND	0000 2359	
295.50	24	E	LUARCA	E	006W32 43N33	90	RC	100HA1A	-6	ND	0000 2359	
295.50	24	F	C COURONNE PHARE	F	005E03 43N20	100	RC	100HA1A	-5	ND	0000 2359	
295.50	24	F	LA ROCHELLE	F	001W10 46N09	70	RC	100HA1A	-9	ND	0000 2359	
295.50	24	MRC	ARBOUA	MRC	005W55 34N54	280	RC	100HA1A	9	ND	0000 2359	
296.00	25	DNK	BLAAVANOSHUK	DNK	008E05 55N34	90	RC	100HA1A	-6	ND	0000 2359	
296.00	25	G	OUTER GABBARD LSTN	G	002E04 51N59	90	RC	100HA1A	-6	ND	0000 2359	
296.00	25	HOL	GOEREE LIGHTPLATFORM	HOL	003E40 51N56	90	RC	100HA1A	-6	ND	0000 2359	
296.00	25	HOL	NO HINDER BF PHARE	HOL	002E51 52N00	90	RC	100HA1A	-6	ND	0000 2359	
296.00	25	NOR	LANGOEYTANGEN	NOR	009E45 58N59	40	RC	100HA1A	-15	ND	0000 2359	
296.00	25	NOR	SKROVA	NOR	014E38 67N09	180	RC	100HA1A	0	ND	0000 2359	
296.00	25	S	GRUNDKALLEN	S	018E51 60N30	60	RC	100HA1A	-10	ND	0000 2359	
296.00	25	TUR	HOPA	TUR	041E20 41N22	180	RC	100HA1A	4	ND	0000 2359	
296.00	25	YUG	DUBROVNIK	YUG	018E07 42N38	10	RC	100HA1A	-22	ND	0000 2359	

Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbols of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
296.50	26	ALG	PHARE DE L'AIGUILLE	ALG	000W29 35N52	280	RC	100HA1A	9	ND	0000 2359	
296.50	26	BEL	WESTHINDER BF PHARE	BEL	002E26 51N23	70	RC	100HA1A	-9	ND	0000 2359	
296.50	26	D	WANGEROOGE	D	007E51 53N47	90	RC	100HA1A	-6	ND	0000 2359	
296.50	26	EGY	HURGADA	EGY	033E50 27N15	150	RC	100HA1A	2	ND	0000 2359	
296.50	26	EGY	SAFAGA	EGY	033E57 26N45	150	RC	100HA1A	2	ND	0000 2359	
296.50	26	EGY	SHAKER ISLAND	EGY	034E00 27N30	150	RC	100HA1A	2	ND	0000 2359	
296.50	26	F	C FERRET	F	001W15 44N39	180	RC	100HA1A	0	ND	0000 2359	
296.50	26	ISL	BJARGTANGAR	ISL	024W32 65N30	160	RC	100HA1A	-1	ND	0000 2359	
296.50	26	POL	GDYNIA	POL	018E34 54N32	20	RC	100HA1A	-22	ND	0000 2359	
296.50	26	POL	KOLOBRZEG	POL	015E33 54N11	10	RC	100HA1A	-26	ND	0000 2359	
296.50	26	POL	SWINOUJSCIE	POL	014E17 53N55	20	RC	100HA1A	-22	ND	0000 2359	
296.50	26	S	NIDINGEN	S	011E54 57N18	60	RC	100HA1A	-10	ND	0000 2359	
296.50	26	S	SVENSKABJOERN	S	020E01 59N33	100	RC	100HA1A	-5	ND	0000 2359	
296.50	26	TUN	CAP BON	TUN	011E03 37N04	370	RC	100HA1A	13	ND	0000 2359	
297.00	27	D	DAMESHOEVED	D	011E00 54N12	90	RC	100HA1A	-6	ND	0000 2359	
297.00	27	E	C TRAFALGAR	E	006W02 36N11	90	RC	100HA1A	-2	ND	0000 2359	
297.00	27	FNL	ISOKARI	FNL	021E01 60N43	90	RC	100HA1A	-6	ND	0000 2359	
297.00	27	I	CIVITAVECCHIA	I	011E49 42N05	130	RC	100HA1A	1	ND	0000 2359	
297.00	27	NOR	HOLMENGRAA	NOR	004E39 60N50	40	RC	100HA1A	-15	ND	0000 2359	
297.00	27	POR	ALBARNAZ	AZR	031W14 39N31	370	RC	100HA1A	13	ND	0000 2359	
297.00	27	POR	PONTA DA BARCA	AZR	028W03 39N06	370	RC	100HA1A	13	ND	0000 2359	
297.00	27	POR	RIBEIRINHA	AZR	028W36 38N36	370	RC	100HA1A	13	ND	0000 2359	
297.00	27	S	HAALLOE	S	011E13 58N20	100	RC	100HA1A	-5	ND	0000 2359	
297.00	27	TUR	FINIKE	TUR	030E09 36N16	280	RC	100HA1A	9	ND	0000 2359	
297.50	28	DNK	SLETTERHAGE	DNK	010E31 56N06	90	RC	100HA1A	-6	ND	0000 2359	
297.50	28	E	C PENAS	E	005W51 43N39	90	RC	100HA1A	-6	ND	0000 2359	
297.50	28	G	LIZARD LSTN	G	005W12 49N57	90	RC	100HA1A	-6	ND	0000 2359	
297.50	28	G	PENLEE POINT LSTN	G	004W11 50N19	90	RC	100HA1A	-6	ND	0000 2359	
297.50	28	LBN	SAIDA	LBN	035E21 33N30	370	RC	100HA1A	13	ND	0000 2359	
297.50	28	URS	BATUMSKIY	URS	041E39 41N39	280	RC	100HA1A	9	ND	0000 2359	
297.50	28	URS	KODOSHSKIY	URS	039E02 44N06	280	RC	100HA1A	5	ND	0000 2359	
297.50	28	URS	MIKULKIN	URS	046E41 67N48	90	RC	100HA1A	-6	ND	0000 2359	
297.50	28	URS	PITSUNDSKIY	URS	040E21 43N09	280	RC	100HA1A	5	ND	0000 2359	
297.50	28	URS	POTIYSKIY	URS	041E40 42N08	280	RC	100HA1A	9	ND	0000 2359	
297.50	28	URS	SOCHINSKIY	URS	039E43 43N35	280	RC	100HA1A	5	ND	0000 2359	
297.50	28	URS	SUKHUMSKIY	URS	040E58 42N59	280	RC	100HA1A	9	ND	0000 2359	
298.00	29	D	ELBE 1 FS	D	008E07 54N00	40	RC	100HA1A	-15	ND	0000 2359	
298.00	29	E	C DE GATA	E	002W11 36N43	90	RC	100HA1A	-2	ND	0000 2359	
298.00	29	F	I DE GROIX PEN MEN	F	003W31 47N39	100	RC	100HA1A	-5	ND	0000 2359	
298.00	29	I	ISOLA TINO	I	009E51 44N02	130	RC	100HA1A	-3	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
298.00	29	LBY	TARABULUS	LBY	013E12 32N53	110	RC	100HA1A	0	ND	0000 2359	
298.00	29	S	SANDHAMMAREN	S	014E12 55N23	80	RC	100HA1A	-7	ND	0000 2359	
298.50	30	DNK	SKAGEN	DNK	010E35 57N44	90	RC	100HA1A	-6	ND	0000 2359	
298.50	30	E	ISLA TAPIA	E	006W57 43N34	90	RC	100HA1A	-6	ND	0000 2359	
298.50	30	F	PERTUSATO PHARE	F	009E11 41N22	180	RC	100HA1A	4	ND	0000 2359	
298.50	30	G	FLATHOLM LSTN	G	003W07 51N22	90	RC	100HA1A	-6	ND	0000 2359	
298.50	30	G	LUNDY SOUTH	G	004W39 51N09	90	RC	100HA1A	-6	ND	0000 2359	
298.50	30	ISL	REYKJANES	ISL	022W43 63N49	160	RC	100HA1A	-1	ND	0000 2359	
298.50	30	NOR	TRESVIKPYNTEN	NOR	005E19 59N16	20	RC	100HA1A	-22	ND	0000 2359	
298.50	30	S	GUSTAF DALEN	S	017E28 58N36	80	RC	100HA1A	-7	ND	0000 2359	
298.50	30	TUN	EL ATTAYA	TUN	011E18 34N44	180	RC	100HA1A	4	ND	0000 2359	
299.00	31	D	BORKUM	D	006E40 53N35	90	RC	100HA1A	-6	ND	0000 2359	
299.00	31	DNK	HALS BARRE	DNK	010E26 56N57	90	RC	100HA1A	-6	ND	0000 2359	
299.00	31	E	TARIFA	E	005W36 36N00	90	RC	100HA1A	-2	ND	0000 2359	
299.00	31	F	BELLE ILE EN MER LH	F	003W14 47N19	180	RC	100HA1A	0	ND	0000 2359	
299.00	31	HOL	AMELAND PHARE	HOL	005E38 53N27	90	RC	100HA1A	-6	ND	0000 2359	
299.00	31	HOL	VLIELAND PHARE	HOL	005E04 53N18	90	RC	100HA1A	-6	ND	0000 2359	
299.00	31	I	TRIESTE	I	013E45 45N40	130	RC	100HA1A	-3	ND	0000 2359	
299.00	31	ISL	RAUFARHOEFN	ISL	015W57 66N27	160	RC	100HA1A	-1	ND	0000 2359	
299.00	31	S	OELANDS SOEDRA UDDE	S	016E24 56N12	40	RC	100HA1A	-15	ND	0000 2359	
299.00	31	S	UNDERSTEN	S	018E55 60N18	130	RC	100HA1A	-3	ND	0000 2359	
299.00	31	TUR	ANAMUR BURNU	TUR	032E48 36N01	180	RC	100HA1A	4	ND	0000 2359	
299.50	32	D	WESTERHEVERSAND	D	008E38 54N22	90	RC	100HA1A	-6	ND	0000 2359	
299.50	32	F	GRIS NEZ PHARE	F	001E35 50N52	60	RC	100HA1A	-10	ND	0000 2359	
299.50	32	FNL	KORSO	FNL	019E54 60N02	90	RC	100HA1A	-6	ND	0000 2359	
299.50	32	FNL	ULKOKALLA	FNL	023E27 64N20	90	RC	100HA1A	-6	ND	0000 2359	
299.50	32	I	VIESTE	I	016E11 41N53	130	RC	100HA1A	1	ND	0000 2359	
299.50	32	NOR	SKOMVAER	NOR	011E52 67N24	180	RC	100HA1A	0	ND	0000 2359	
300.00	33	DNK	FREDERIKSHAVN	DNK	010E33 57N26	20	RC	100HA1A	-22	ND	0000 2359	
300.00	33	DNK	HAMMERODDE	DNK	014E46 55N18	90	RC	100HA1A	-6	ND	0000 2359	
300.00	33	F	AILLY PHARE	F	000E57 49N55	100	RC	100HA1A	-5	ND	0000 2359	
300.00	33	F	LSH LA BASSURELLE	F	000W58 50N34	100	RC	100HA1A	-5	ND	0000 2359	
300.00	33	G	CLOCH POINT	G	004W53 55N57	10	RC	100HA1A	-26	ND	0000 2359	
300.00	33	G	POINT LYNAS	G	004W17 53N24	10	RC	100HA1A	-26	ND	0000 2359	
300.00	33	G	ROYAL SOVEREIGN LSTN	G	000E26 50N43	90	RC	100HA1A	-6	ND	0000 2359	
300.00	33	G	SOUTER POINT LSTN	G	001W21 54N58	10	RC	100HA1A	-26	ND	0000 2359	
300.00	33	IRL	LOOPHEAD LSTN	IRL	009W56 52N34	90	RC	100HA1A	-6	ND	0000 2359	
300.00	33	IRL	SLYNE HEAD LSTN	IRL	010W14 53N24	90	RC	100HA1A	-6	ND	0000 2359	
300.00	33	ISL	SKAGATA	ISL	020W21 66N07	160	RC	100HA1A	-1	ND	0000 2359	
300.00	33	YUG	KAMENJAK	YUG	014E55 44N47	180	RC	100HA1A	0	ND	0000 2359	

Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
300.50	34	D	TRAVEMUENDE	D	010E53 53N58	90	RC	100HA1A	-6	ND	0000 2359	
300.50	34	E	C BLANCO	E	002E47 39N22	90	RC	100HA1A	-2	ND	0000 2359	
300.50	34	LBY	EZWETINA	LBY	020E08 30N57	90	RC	100HA1A	-2	ND	0000 2359	
300.50	34	NOR	BJOERNSUND	NOR	006E48 62N53	90	RC	100HA1A	-6	ND	0000 2359	
300.50	34	NOR	LISTA	NOR	006E34 58N06	130	RC	100HA1A	-3	ND	0000 2359	
300.50	34	S	HOLMOEGADD	S	020E45 63N36	120	RC	100HA1A	-4	ND	0000 2359	
300.50	34	URS	BELOSARAYSKIY	UKR	037E20 46N53	280	RC	100HA1A	5	ND	0000 2359	
300.50	34	URS	BERDYANSKIY NIZHNIY	UKR	036E46 46N38	280	RC	100HA1A	5	ND	0000 2359	
300.50	34	URS	AKHILLEONSKIY	URS	036E47 45N26	50	RC	100HA1A	-11	ND	0000 2359	
300.50	34	URS	AKHTARSKIY	URS	038E11 46N06	180	RC	100HA1A	0	ND	0000 2359	
300.50	34	URS	CHESMENSKIY	URS	036E32 64N43	50	RC	100HA1A	-11	ND	0000 2359	
300.50	34	URS	TALLINN	URS	024E44 59N43	50	RC	100HA1A	-11	ND	0000 2359	
300.50	34	URS	YENIKALSKIY	URS	036E38 45N23	280	RC	100HA1A	5	ND	0000 2359	
301.00	35	ALG	PORT DE MOSTAGANEM	ALG	000W04 35N56	30	RC	100HA1A	-15	ND	0000 2359	
301.00	35	DNK	NAKKEHOVED	DNK	012E21 56N07	90	RC	100HA1A	-6	ND	0000 2359	
301.00	35	E	PNT CARNERO	E	005W26 36N05	90	RC	100HA1A	-2	ND	0000 2359	
301.00	35	F	CALAIS PT	F	001E51 50N28	10	RC	100HA1A	-26	ND	0000 2359	
301.00	35	F	CREAC'H OUESSANT LH	F	005W08 48N28	180	RC	100HA1A	0	ND	0000 2359	
301.00	35	F	S GERVAIS	F	004E50 43N26	40	RC	100HA1A	-15	ND	0000 2359	
301.00	35	HOL	EIERLAND PHARE	HOL	004E52 53N11	90	RC	100HA1A	-6	ND	0000 2359	
301.00	35	ISL	STRANDHOEFN	ISL	014W39 65N55	160	RC	100HA1A	-1	ND	0000 2359	
301.00	35	NOR	FULEHUK	NOR	010E36 59N10	20	RC	100HA1A	-22	ND	0000 2359	
301.00	35	TUR	INCEKUM BURNU	TUR	033E57 36N14	180	RC	100HA1A	4	ND	0000 2359	
301.00	35	TUR	KEFREN ADA	TUR	030E17 41N13	190	RC	100HA1A	5	ND	0000 2359	
301.00	35	TUR	OLUCE BURNU	TUR	031E24 41N18	190	RC	100HA1A	5	ND	0000 2359	
301.00	35	TUR	RUMELI BURNU	TUR	029E06 41N13	190	RC	100HA1A	5	ND	0000 2359	
301.50	36	BUL	MASLEN NOS	BUL	027E50 42N18	100	RC	100HA1A	-1	ND	0000 2359	
301.50	36	D	NEULAND	D	010E36 54N22	90	RC	100HA1A	-6	ND	0000 2359	
301.50	36	E	TORRE DE HERCULES	E	008W24 43N23	90	RC	100HA1A	-6	ND	0000 2359	
301.50	36	G	NAB TOWER	G	000W57 50N40	40	RC	100HA1A	-15	ND	0000 2359	
301.50	36	S	HOBURG	S	018E09 56N55	130	RC	100HA1A	-3	ND	0000 2359	
302.00	37	F	CHERBOURG FT W LH	F	001W39 49N41	40	RC	100HA1A	-15	ND	0000 2359	
302.00	37	F	GIRONDE BATEAU BXA	F	001W29 45N40	10	RC	100HA1A	-26	ND	0000 2359	
302.00	37	GRC	AXIOS	GRC	022E44 40N30	20	RC	100HA1A	-18	ND	0000 2359	
302.00	37	LBY	RASLANAUF	LBY	018E32 30N31	90	RC	100HA1A	-2	ND	0000 2359	
302.00	37	S	TRUBADUREN	S	011E38 57N36	100	RC	100HA1A	-5	ND	0000 2359	
302.00	37	TUN	LA GALITE	TUN	008E56 37N31	100	RC	100HA1A	-1	ND	0000 2359	
302.50	38	D	KIEL	D	010E16 54N30	90	RC	100HA1A	-6	ND	0000 2359	
302.50	38	F	LES BALESINES PHARE	F	001W34 46N15	100	RC	100HA1A	-5	ND	0000 2359	
302.50	38	HOL	HOEKVAN HOLLANDPHARE	HOL	004E07 51N59	90	RC	100HA1A	-6	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
302.50	38	HOL	IJMUIDEN PHARE	HOL	004E35 52N28	90	RC	100HA1A	-6	ND	0000 2359	
302.50	38	HOL	TEXEL BF PHARE	HOL	004E07 52N47	90	RC	100HA1A	-6	ND	0000 2359	
302.50	38	I	ISOLA PANTELLERIA	I	011E57 36N50	180	RC	100HA1A	4	ND	0000 2359	
302.50	38	NOR	TORUNGEN	NOR	008E47 58N23	90	RC	100HA1A	-6	ND	0000 2359	
302.50	38	ROU	SFINTU GHEORGHE	ROU	029E36 45N00	370	RC	100HA1A	9	ND	0000 2359	
302.50	38	S	EGGEGRUND	S	017E34 60N44	100	RC	100HA1A	-5	ND	0000 2359	
302.50	38	URS	MIKELBAKA	URS	021E59 57N36	30	RC	100HA1A	-19	ND	0000 2359	
303.00	39	E	ROTA	E	006W23 36N38	150	RC	100HA1A	2	ND	0000 2359	
303.00	39	F	I D'YEU PHARE	F	002W23 46N43	190	RC	100HA1A	1	ND	0000 2359	
303.00	39	FNL	HELSINKI	FNL	024E56 59N57	90	RC	100HA1A	-6	ND	0000 2359	
303.00	39	G	EILEAN GLAS	G	006W38 57N51	90	RC	100HA1A	-6	ND	0000 2359	
303.00	39	G	OIGH SGEIR	G	006W41 56N58	90	RC	100HA1A	-6	ND	0000 2359	
303.00	39	HOL	SCHEVENINGEN PHARE	HOL	004E16 52N06	10	RC	100HA1A	-26	ND	0700 1600	
303.00	39	IRL	BALLYCOTTON LSTN	IRL	007W59 51N50	10	RC	100HA1A	-26	ND	0900 1800	
303.00	39	S	FALSTERBOREV	S	012E40 55N19	80	RC	100HA1A	-7	ND	0000 2359	
303.50	40	ALG	CAP COBELLIN	ALG	004E25 36N54	90	RC	100HA1A	-2	ND	0000 2359	
303.50	40	DDR	WARNEMUENDE	DDR	012E05 54N11	30	RC	100HA1A	-19	ND	0000 2359	
303.50	40	E	LLANES	E	004W45 43N25	90	RC	100HA1A	-6	ND	0000 2359	
303.50	40	E	PNT LLOBREGAT	E	002E09 41N19	90	RC	100HA1A	-2	ND	0000 2359	
303.50	40	EGY	ALEXANDRIA	EGY	029E50 31N13	150	RC	100HA1A	2	ND	0000 2359	
303.50	40	EGY	RAS EL SHEKEIN	EGY	028E50 30N55	150	RC	100HA1A	2	ND	0000 2359	
303.50	40	EGY	ROSETTA	EGY	030E21 31N30	150	RC	100HA1A	2	ND	0000 2359	
303.50	40	EGY	TOR	EGY	033E35 28N15	80	RC	100HA1A	-3	ND	0000 2359	
303.50	40	G	POOLE HARBOUR	G	001W55 50N40	20	RC	100HA1A	-22	ND	0000 2359	
303.50	40	LBY	ELBREGA	LBY	019E33 30N25	90	RC	100HA1A	-2	ND	0000 2359	
303.50	40	MLT	XLOKK RADIO	MLT	014E32 35N49	210	RC	100HA1A	6	ND	0000 2359	
303.50	40	NOR	FEISTEIN	NOR	005E30 58N49	90	RC	100HA1A	-6	ND	0000 2359	
303.50	40	NOR	GRASOEYANE	NOR	005E45 62N25	40	RC	100HA1A	-15	ND	0000 2359	
303.50	40	TUR	AKINCI BURNU	TUR	035E47 36N19	180	RC	100HA1A	4	ND	0000 2359	
303.50	40	TUR	MERSIN	TUR	034E37 36N47	180	RC	100HA1A	4	ND	0000 2359	
303.50	40	URS	KOLGUYEV YUZYNY	URS	048E40 68N42	70	RC	100HA1A	-9	ND	0000 2359	
303.50	40	URS	KONUSHINSKIY	URS	043E47 67N12	50	RC	100HA1A	-11	ND	0000 2359	
303.50	40	YUG	MOVAR	YUG	015E58 43N30	180	RC	100HA1A	0	ND	0000 2359	
304.00	41	D	FEHMARNBELT	D	011E09 54N36	40	RC	100HA1A	-15	ND	0000 2359	
304.00	41	DNK	AARHUS	DNK	010E13 56N10	20	RC	100HA1A	-22	ND	0000 2359	
304.00	41	FNL	ORRENGRUND	FNL	026E27 60N17	90	RC	100HA1A	-6	ND	0000 2359	
304.00	41	G	INCHKEITH	G	003W08 56N02	20	RC	100HA1A	-22	ND	0000 2359	
304.00	41	I	PUNTA DELLA MAESTRA	I	012E36 44N58	180	RC	100HA1A	0	ND	0000 2359	
304.00	41	IRL	BALLYCOTTON LSTN	IRL	007W59 51N50	90	RC	100HA1A	-6	ND	0000 2359	
304.00	41	IRL	HOOK POINT LSTN	IRL	006W56 52N07	90	RC	100HA1A	-6	ND	0000 2359	



Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
304.00	41	IRL	OLD HD KINSALE LSTN	IRL	008W32 51N36	90	RC	100HA1A	-6	ND	0000 2359	
304.00	41	ISL	SKARDSFJARA	ISL	017W59 63N31	160	RC	100HA1A	-1	ND	0000 2359	
304.00	41	S	NORSTROEMSGRUND	S	022E20 65N07	80	RC	100HA1A	-7	ND	0000 2359	
304.50	42	E	C MAYOR	E	003W47 43N29	90	RC	100HA1A	-6	ND	0000 2359	
304.50	42	F	BLOSCON	F	003W58 48N43	20	RC	100HA1A	-22	ND	0000 2359	
304.50	42	G	ST PETER PORT	G	002W31 49N27	20	RC	100HA1A	-22	ND	0000 2359	
304.50	42	MRC	CAP GHIR	MRC	009W53 30N38	280	RC	100HA1A	9	ND	0000 2359	
305.00	43	DNK	FORNAES	DNK	010E56 56N25	90	RC	100HA1A	-6	ND	0000 2359	
305.00	43	E	C PRIORINO CHICO	E	008W20 43N27	90	RC	100HA1A	-6	ND	0000 2359	
305.00	43	E	MALAGA	E	004W25 36N43	90	RC	100HA1A	-2	ND	0000 2359	
305.00	43	F	LA GIRAGLIA PHARE	F	009E24 43N02	180	RC	100HA1A	0	ND	0000 2359	
305.00	43	FNL	KALLAN	FNL	022E32 63N45	90	RC	100HA1A	-6	ND	0000 2359	
305.00	43	G	ISLE OF MAY	G	002W33 56N11	180	RC	100HA1A	0	ND	0000 2359	
305.00	43	G	LONGSTONE LSTN	G	001W36 55N38	90	RC	100HA1A	-6	ND	0000 2359	
305.00	43	G	SOUTER POINT	G	001W24 55N00	90	RC	100HA1A	-6	ND	0000 2359	
305.00	43	NOR	SKARVOEY	NOR	005E59 58N24	20	RC	100HA1A	-22	ND	0000 2359	
305.50	44	F	ANTIFER PHARE	F	000E10 49N41	100	RC	100HA1A	-5	ND	0000 2359	
305.50	44	F	PLANIER PHARE	F	005E14 43N12	180	RC	100HA1A	0	ND	0000 2359	
305.50	44	POR	C S MARIA	POR	007W52 36N58	90	RC	100HA1A	-2	ND	0000 2359	
305.50	44	POR	C S VICENTE	POR	009W00 37N01	370	RC	100HA1A	13	ND	0000 2359	
305.50	44	POR	VILA REAL S ANTONIO	POR	007W25 37N11	90	RC	100HA1A	-2	ND	0000 2359	
305.50	44	S	STORA FJAEDERAEGG	S	021E00 63N49	40	RC	100HA1A	-15	ND	0000 2359	
305.50	44	S	TRELLEBORG	S	013E09 55N22	60	RC	100HA1A	-10	ND	0000 2359	
306.00	45	DNK	THYBORDEN	DNK	008E13 56N43	180	RC	100HA1A	0	ND	0000 2359	
306.00	45	E	C DE LAS HUERTAS	E	000W24 38N21	180	RC	100HA1A	4	ND	0000 2359	
306.00	45	FNL	PORKKALA	FNL	024E18 59N52	90	RC	100HA1A	-6	ND	0000 2359	
306.00	45	G	ST HELIER HARBOUR	G	002W07 49N10	20	RC	100HA1A	-22	ND	0000 2359	
306.00	45	ISL	GRIMSEY	ISL	017W59 66N32	160	RC	100HA1A	-1	ND	0000 2359	
306.00	45	S	SKAGSUDD	S	019E01 63N11	80	RC	100HA1A	-7	ND	0000 2359	
306.00	45	TUN	LE GALITON	TUN	008E53 37N30	90	RC	100HA1A	-2	ND	0000 2359	
306.50	46	DNK	LAESOE RENDE	DNK	010E49 57N13	90	RC	100HA1A	-6	ND	0000 2359	
306.50	46	F	GR JARDIN PHARE	F	002W05 48N40	20	RC	100HA1A	-22	ND	0000 2359	
306.50	46	MRC	CAP SPARTEL	MRC	005W56 35N47	380	RC	100HA1A	14	ND	0000 2359	
306.50	46	NOR	HELNES	NOR	026E13 71N03	90	RC	100HA1A	-6	ND	0000 2359	
306.50	46	POL	HEL	POL	018E49 54N36	20	RC	100HA1A	-22	ND	0000 2359	
306.50	46	POL	USTKA	POL	016E51 54N35	20	RC	100HA1A	-22	ND	0000 2359	
306.50	46	URS	MORZHOVSKIY	URS	042E28 66N43	110	RC	100HA1A	-4	ND	0000 2359	
306.50	46	URS	SOSNOVETSKIY	URS	040E41 66N29	130	RC	100HA1A	-3	ND	0000 2359	
306.50	46	URS	TERSKO-ORLOVSKIY	URS	041E20 67N12	140	RC	100HA1A	-2	ND	0000 2359	
306.50	46	URS	VORONOVSKIY	URS	042E14 66N30	280	RC	100HA1A	5	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
307.00	47	ALG	CAP BOUGAROUN	ALG	006E28 37N05	90	RC	100HA1A	-2	ND	0000 2359	
307.00	47	DNK	HIRSHOLM	DNK	010E38 57N29	90	RC	100HA1A	-6	ND	0000 2359	
307.00	47	E	SACRATIF	E	003W28 36N41	180	RC	100HA1A	4	ND	0000 2359	
307.00	47	G	FLAMBOROUGH HEAD	G	000W04 54N06	90	RC	100HA1A	-6	ND	0000 2359	
307.00	47	G	HEUGH LSTN	G	001W10 54N41	90	RC	100HA1A	-6	ND	0000 2359	
307.00	47	G	SPURN LSTN	G	001E14 53N34	90	RC	100HA1A	-6	ND	0000 2359	
307.00	47	NOR	MARSTEIN	NOR	005E00 60N07	90	RC	100HA1A	-6	ND	0000 2359	
307.00	47	S	RATASKAER	S	020E54 64N00	80	RC	100HA1A	-7	ND	0000 2359	
307.00	47	S	STORA KARLSOE	S	017E58 57N17	80	RC	100HA1A	-7	ND	0000 2359	
307.50	48	DNK	DROGDEN	DNK	012E43 55N32	90	RC	100HA1A	-6	ND	0000 2359	
307.50	48	F	LES SABLES OLONNE	F	001W48 46N30	10	RC	100HA1A	-26	ND	0000 2359	
307.50	48	MRC	TETOUAN	MRC	005W17 35N37	150	RC	100HA1A	2	ND	0000 2359	
307.50	48	TUR	IZMIR KARABURUN	TUR	026E31 38N39	180	RC	100HA1A	4	ND	0000 2359	
307.50	48	TUR	MEHMETCIK BURNU	TUR	026E10 40N02	180	RC	100HA1A	4	ND	0000 2359	
308.00	49	E	ALBORAN	E	003W02 35N56	50	RC	100HA1A	-7	ND	0000 2359	
308.00	49	F	ROCHES DOUVRES PHARE	F	002W50 49N06	130	RC	100HA1A	-3	ND	0000 2359	
308.00	49	G	CASQUETS LSTN	G	002W22 49N43	90	RC	100HA1A	-6	ND	0000 2359	
308.00	49	G	START POINT LSTN	G	003W38 50N13	90	RC	100HA1A	-6	ND	0000 2359	
308.00	49	ISL	DJUPIOGUR	ISL	014W17 64N39	160	RC	100HA1A	-1	ND	0000 2359	
308.00	49	MRC	OUKACHA	MRC	007W34 33N37	50	RC	100HA1A	-7	ND	0000 2359	
308.00	49	POR	C ESPICHEL	POR	009W13 38N25	90	RC	100HA1A	-2	ND	0000 2359	
308.00	49	POR	C ROCA	POR	009W24 38N47	180	RC	100HA1A	4	ND	0000 2359	
308.00	49	POR	C SINES	POR	008W53 37N57	90	RC	100HA1A	-2	ND	0000 2359	
308.00	49	TUR	IGNE ADA	TUR	028E03 41N53	180	RC	100HA1A	4	ND	0000 2359	
308.50	50	E	CHIPIONA	E	006W26 36N44	90	RC	100HA1A	-2	ND	0000 2359	
308.50	50	F	S NAZAIRE S GILDAS	F	002W15 47N08	70	RC	100HA1A	-9	ND	0000 2359	
308.50	50	S	KUNGSGRUNDET	S	016E54 57N41	60	RC	100HA1A	-10	ND	0000 2359	
309.00	51	D	ALTE WESER	D	008E08 53N52	40	RC	100HA1A	-15	ND	0000 2359	
309.00	51	DNK	SVANEMOELLEN	DNK	012E35 55N42	20	RC	100HA1A	-22	ND	0000 2359	
309.00	51	G	DOUGLAS	G	004W28 54N09	90	RC	100HA1A	-6	ND	0000 2359	
309.00	51	G	POINT LYNAS LSTN	G	004W17 53N24	90	RC	100HA1A	-6	ND	0000 2359	
309.00	51	G	WALNEY ISLAND	G	003W10 54N02	90	RC	100HA1A	-6	ND	0000 2359	
309.00	51	I	S BENEDETTO TRONTO	I	013E53 42N57	180	RC	100HA1A	4	ND	0000 2359	
309.00	51	S	ALMAGRUNDET	S	019E10 59N09	80	RC	100HA1A	-7	ND	0000 2359	
309.50	52	ALG	PORT D'ALGER	ALG	003E04 36N48	40	RC	100HA1A	-11	ND	0000 2359	
309.50	52	DNK	ROESNAES	DNK	010E52 55N45	90	RC	100HA1A	-6	ND	0000 2359	
309.50	52	E	ESTACA DE BARES	E	007W41 43N47	180	RC	100HA1A	0	ND	0000 2359	
309.50	52	E	ROMPIDO	E	007W08 37N13	90	RC	100HA1A	-2	ND	0000 2359	
309.50	52	NOR	ANDENES	NOR	016E07 69N19	90	RC	100HA1A	-6	ND	0000 2359	
309.50	52	NOR	UTSIRA	NOR	004E52 59N18	130	RC	100HA1A	-3	ND	0000 2359	

Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
309.50	52	S	OERSKAER	S	018E23 60N32	80	RC	100HA1A	-7	ND	0000 2359	
309.50	52	TUN	CAP BLANC	TUN	009E50 37N19	180	RC	100HA1A	4	ND	0000 2359	
309.50	52	URS	EVPATORIYSKIY	UKR	033E16 45N09	280	RC	100HA1A	5	ND	0000 2359	
309.50	52	URS	KHERSONESSKIY	UKR	033E23 44N35	280	RC	100HA1A	5	ND	0000 2359	
309.50	52	URS	ODESSKIY	UKR	030E45 46N23	280	RC	100HA1A	5	ND	0000 2359	
309.50	52	URS	TARKHANKUTSKIY	UKR	032E30 45N21	280	RC	100HA1A	5	ND	0000 2359	
309.50	52	URS	TENDROVSKIY	UKR	031E31 46N19	280	RC	100HA1A	5	ND	0000 2359	
309.50	52	URS	VORONTSOVSKIY	UKR	030E46 46N30	180	RC	100HA1A	0	ND	0000 2359	
309.50	52	URS	IRBENSKIY	URS	021E37 57N51	30	RC	100HA1A	-19	ND	0000 2359	
309.50	52	URS	SCHWEDSKII	URS	055E49 68N36	60	RC	100HA1A	-10	ND	0000 2359	
309.50	52	URS	ZHUZHMUYSKIY	URS	035E34 64N41	40	RC	100HA1A	-15	ND	0000 2359	
309.50	52	YUG	RIJEKA	YUG	014E25 45N20	10	RC	100HA1A	-26	ND	0000 2359	
310.00	53	D	KALKGRUND	D	009E53 54N50	90	RC	100HA1A	-6	ND	0000 2359	
310.00	53	F	BOULOGNE SUR MER	F	001E36 50N44	10	RC	100HA1A	-26	ND	0000 2359	
310.00	53	F	C BEAR	F	003E08 42N31	100	RC	100HA1A	-1	ND	0000 2359	
310.00	53	F	VER SUR MER PHARE	F	000W31 49N20	40	RC	100HA1A	-15	ND	0000 2359	
310.00	53	I	CAPO SANDALO	I	008E13 39N09	130	RC	100HA1A	1	ND	0000 2359	
310.00	53	ISL	DALATANGI	ISL	013W35 65N16	160	RC	100HA1A	-1	ND	0000 2359	
310.00	53	S	OELANDS NORRA UDDE	S	017E06 57N22	130	RC	100HA1A	-3	ND	0000 2359	
310.50	54	DNK	HANSTHOLM	DNK	008E36 57N07	180	RC	100HA1A	0	ND	0000 2359	
310.50	54	E	CASTELLON	E	000E01 39N58	90	RC	100HA1A	-2	ND	0000 2359	
310.50	54	EGY	ARISH	EGY	033E48 31N08	150	RC	100HA1A	2	ND	0000 2359	
310.50	54	EGY	DEMIETTA	EGY	031E51 31N31	150	RC	100HA1A	2	ND	0000 2359	
310.50	54	EGY	PORT-SAID	EGY	032E17 31N16	80	RC	100HA1A	-3	ND	0000 2359	
310.50	54	FNL	GUSTAVSVARN	FNL	022E57 59N48	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	G	FALLS LSTN	G	001E48 51N18	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	G	NORTH FORELAND LSTN	G	001E26 51N22	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	G	SCARWEATHER LSTN	G	003W56 51N26	10	RC	100HA1A	-26	ND	0000 2359	
310.50	54	G	SOUTH FORELAND	G	001E22 51N08	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	I	GENOVA	I	008E54 44N24	130	RC	100HA1A	-3	ND	0000 2359	
310.50	54	LBY	ESSIDERA	LBY	018E22 30N38	130	RC	100HA1A	1	ND	0000 2359	
310.50	54	NOR	BOEFJORD	NOR	030E10 69N52	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	POL	HEL	POL	018E49 54N36	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	POL	KRYNICA MORSKA	POL	018E27 54N23	90	RC	100HA1A	-6	ND	0000 2359	
310.50	54	YUG	STONCICA	YUG	016E15 43N04	180	RC	100HA1A	0	ND	0000 2359	
311.00	55	E	CEUTA	E	005W18 35N54	90	RC	100HA1A	-2	ND	0000 2359	
311.00	55	G	CREGNEISH	G	004W46 54N04	100	RC	100HA1A	-5	ND	0000 2359	
311.00	55	G	MEW ISLAND LSTN	G	005W31 54N42	90	RC	100HA1A	-6	ND	0000 2359	
311.00	55	G	POINT OF AYRE	G	004W22 54N25	90	RC	100HA1A	-6	ND	0000 2359	
311.00	55	I	CAPO SAN VITO TARANT	I	017E12 40N25	130	RC	100HA1A	1	ND	0000 2359	

1	2	3	4	5	6	7	8	9	10	11	12	13
311.00	55	IRL	MIZEN HEAD LSTN	IRL	009W49 51N27	10	RC	100HA1A	-26	ND	0900 1800	
311.00	55	NOR	GRINNA	NOR	010E58 64N45	30	RC	100HA1A	-19	ND	0000 2359	
311.00	55	S	UTKLIPPAN	S	015E42 55N57	100	RC	100HA1A	-5	ND	0000 2359	
311.50	56	ALG	CAP SIGLI	ALG	004E45 36N53	370	RC	100HA1A	13	ND	0000 2359	
311.50	56	I	SENIGALLIA	I	013E13 43N43	180	RC	100HA1A	0	ND	0000 2359	
312.00	57	BEL	OOSTENDE PHARE	BEL	002E55 51N14	60	RC	100HA1A	-10	ND	0000 2359	
312.00	57	D	DEUTSCHE BUCHT FS	D	007E26 54N11	40	RC	100HA1A	-15	ND	0000 2359	
312.00	57	E	CASTRO URDIALES	E	003W13 43N23	90	RC	100HA1A	-6	ND	0000 2359	
312.00	57	F	ECKMUHL PHARE	F	004W23 47N48	100	RC	100HA1A	-5	ND	0000 2359	
312.00	57	F	SENETOSE PHARE	F	008E48 41N33	180	RC	100HA1A	4	ND	0000 2359	
312.00	57	NOR	HENDANES	NOR	005E02 61N57	20	RC	100HA1A	-22	ND	0000 2359	
312.00	57	NOR	TENNHOLMEN	NOR	013E30 67N18	90	RC	100HA1A	-6	ND	0000 2359	
312.50	58	E	C ESTAY	E	008W49 42N11	90	RC	100HA1A	-2	ND	0000 2359	
312.50	58	F	CALAIS PHARE	F	001E51 50N58	40	RC	100HA1A	-15	ND	0000 2359	
312.50	58	LBY	BENGAZI	LBY	020E03 32N07	370	RC	100HA1A	13	ND	0000 2359	
312.50	58	NOR	FRUHOLMEN	NOR	023E59 71N05	90	RC	100HA1A	-6	ND	0000 2359	
312.50	58	URS	AKMENRAGS	URS	021E04 56N50	180	RC	100HA1A	0	ND	0000 2359	
312.50	58	URS	BALTIYSK	URS	019E54 54N38	150	RC	100HA1A	-2	ND	0000 2359	
312.50	58	URS	GORODETSKIY	URS	040E59 67N42	280	RC	100HA1A	5	ND	0000 2359	
312.50	58	URS	KANINSKIY	URS	043E17 68N39	280	RC	100HA1A	5	ND	0000 2359	
312.50	58	URS	KLAYPEDA	URS	021E06 55N44	220	RC	100HA1A	2	ND	0000 2359	
312.50	58	URS	LIEPAIA	URS	021E00 56N31	220	RC	100HA1A	2	ND	0000 2359	
312.50	58	URS	LJAMCHIN	URS	059E07 69N52	60	RC	100HA1A	-10	ND	0000 2359	
312.50	58	URS	SHOYNA	URS	044E08 67N53	280	RC	100HA1A	5	ND	0000 2359	
312.50	58	URS	SVJATONOSSKII	URS	039E45 68N09	280	RC	100HA1A	5	ND	0000 2359	
312.50	58	URS	TARAN	URS	019E59 54N58	220	RC	100HA1A	2	ND	0000 2359	
312.50	58	URS	VENTSPILS	URS	021E33 57N24	180	RC	100HA1A	0	ND	0000 2359	
312.50	58	YUG	MOLUNAT	YUG	018E26 42N27	180	RC	100HA1A	4	ND	0000 2359	
313.00	59	D	HELGOLAND	D	007E53 54N11	90	RC	100HA1A	-6	ND	0000 2359	
313.00	59	E	C DE PALOS	E	000W41 37N38	90	RC	100HA1A	-2	ND	0000 2359	
313.00	59	NOR	HALTEN	NOR	009E24 64N10	90	RC	100HA1A	-6	ND	0000 2359	
313.50	60	ALB	VLORA NAVIGATION	ALB	019E29 40N27	100	RC	100HA1A	-1	ND	0000 2359	
313.50	60	ALG	CAP TENES	ALG	001E20 36N33	90	RC	100HA1A	-2	ND	0000 2359	
313.50	60	DNK	HESTEHØVED	DNK	012E10 54N50	90	RC	100HA1A	-6	ND	0000 2359	
313.50	60	FNL	MANTYLUOTO	FNL	021E28 61N36	90	RC	100HA1A	-6	ND	0000 2359	
313.50	60	G	BARRA HEAD	G	007W39 56N47	360	RC	100HA1A	9	ND	0000 2359	
313.50	60	G	BRIGHTON MARINA LSTN	G	000W06 50N48	20	RC	100HA1A	-22	ND	0000 2359	
313.50	60	IRL	EAGLE ISLAND LSTN	IRL	010W06 54N17	370	RC	100HA1A	9	ND	0000 2359	
313.50	60	IRL	TORY ISLAND LSTN	IRL	008W15 55N16	180	RC	100HA1A	0	ND	0000 2359	
313.50	60	NOR	OKSOEY	NOR	008E03 58N04	90	RC	100HA1A	-6	ND	0000 2359	

Assigned frequency (kHz)	Channel number	Country symbol	Transmitting station name	Symbol of the country or geographical area in which the transmitting station is located	Longitude and latitude of the transmitting station	Radius (km) of the circular service area	Nature of service	Necessary bandwidth and class of emission	Necessary Effective Monopole Radiated Power (e.m.r.p.) (dBW)	Antenna characteristics (ND)	Regular hours of operation (UTC)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

1	2	3	4	5	6	7	8	9	10	11	12	13
313.50	60	S	OESTERGARN	S	018E59 57N27	100	RC	100HA1A	-5	ND	0000 2359	
314.00	61	DNK	LYNGVIG	DNK	008E09 56N15	180	RC	100HA1A	0	ND	0000 2359	
314.00	61	F	I VIERGE PHARE	F	004W34 48N38	130	RC	100HA1A	-3	ND	0000 2359	
314.00	61	F	PORQUEROLLES PHARE	F	006E12 42N59	370	RC	100HA1A	13	ND	0000 2359	
314.00	61	NOR	HEKKINGEN	NOR	017E49 69N36	90	RC	100HA1A	-6	ND	0000 2359	
314.00	61	S	HAELLGRUND	S	017E24 61N17	60	RC	100HA1A	-10	ND	0000 2359	
314.00	61	S	MALOEREN	S	023E34 65N32	100	RC	100HA1A	-5	ND	0000 2359	
314.50	62	ALG	BEJAIA	ALG	005E06 36N45	20	RC	100HA1A	-18	ND	0000 2359	
314.50	62	DNK	MON	DNK	012E47 54N48	90	RC	100HA1A	-6	ND	0000 2359	
314.50	62	FNL	KALBADAGRUND	FNL	025E36 59N59	90	RC	100HA1A	-6	ND	0000 2359	
314.50	62	HOL	IJMUIDEN PHARE	HOL	004E35 52N28	10	RC	100HA1A	-26	ND	0700 1600	
314.50	62	I	PUNTA PENNA	I	014E42 42N10	180	RC	100HA1A	4	ND	0000 2359	
314.50	62	ISL	HORNBJARG	ISL	022W23 66N25	160	RC	100HA1A	-1	ND	0000 2359	
314.50	62	LBY	ZUARA	LBY	012E26 32N49	90	RC	100HA1A	-2	ND	0000 2359	
314.50	62	TUN	PLATE FORME TAZARKA	TUN	011E40 36N36	70	RC	100HA1A	-5	ND	0600 2000	
314.50	62	URS	ANAPSKIY	URS	037E18 44N53	280	RC	100HA1A	5	ND	0000 2359	
314.50	62	URS	DOOBSKIY	URS	037E55 44N38	280	RC	100HA1A	5	ND	0000 2359	
314.50	62	URS	ZHELEZNYIY ROG	URS	036E44 45N07	50	RC	100HA1A	-11	ND	0000 2359	



## ANNEX 2

### Channelling Arrangement for Maritime Radiobeacons in the Band 283.5 - 315 kHz<sup>1</sup>

Channel No.	Frequency (kHz)	Channel No.	Frequency (kHz)
1	284.0	31	299.0
2	284.5	32	299.5
3	285.0	33	300.0
4	285.5	34	300.5
5	286.0	35	301.0
6	286.5	36	301.5
7	287.0	37	302.0
8	287.5	38	302.5
9	288.0	39	303.0
10	288.5	40	303.5
11	289.0	41	304.0
12	289.5	42	304.5
13	290.0	43	305.0
14	290.5	44	305.5
15	291.0	45	306.0
16	291.5	46	306.5
17	292.0	47	307.0
18	292.5	48	307.5
19	293.0	49	308.0
20	293.5	50	308.5
21	294.0	51	309.0
22	294.5	52	309.5
23	295.0	53	310.0
24	295.5	54	310.5
25	296.0	55	311.0
26	296.5	56	311.5
27	297.0	57	312.0
28	297.5	58	312.5
29	298.0	59	313.0
30	298.5	60	313.5
		61	314.0
		62	314.5

<sup>1</sup> One multi-frequency navigation system using maritime radiobeacons needs the use of frequencies which, except for one of them, are not integer multiples of 500 Hz.

If no protection area exists, the one frequency (285.5 kHz) which is an integer multiple of 500 Hz should be designated for the exclusive use of this system.

## ANNEX 3

### TECHNICAL DATA

#### **Technical Parameters Used in Establishing a Frequency Assignment Plan in the European Maritime Area for the Maritime Radionavigation Service (Radiobeacons) in the Band 283.5 - 315 kHz**

#### **1. *Maritime radionavigation service (radiobeacons)***

##### **1.1 *Class of emission***

The Plan was established on the basis of class of emission A1A. However, the technical parameters also provide for composite emissions using both A1A and F1B.

##### **1.2 *Propagation***

The ground-wave mode of propagation only was used. Ground-wave field strength was calculated according to CCIR Recommendation 368-4 for propagation over sea, with  $\sigma = 5 \text{ S/m}$ ,  $\epsilon = 70$ . The curve for 300 kHz was used. This is given in Figure 3.1 and refers to an e.m.r.p. of 1 kW.

It was recognized that, where some part of the propagation path is over land, the resulting field strength will be lower than that obtained using the prediction for an oversea path. This was taken into account in the Plan.

##### **1.3 *Minimum field strength to be protected***

The following values of minimum field strength to be protected (see also Nos. 2861 and 2862 of the Radio Regulations) were applied:

1.3.1 34 dB( $\mu\text{V/m}$ ) for stations north of parallel 43° North;

1.3.2 37.5 dB( $\mu\text{V/m}$ ) for stations on and south of parallel 43° North.

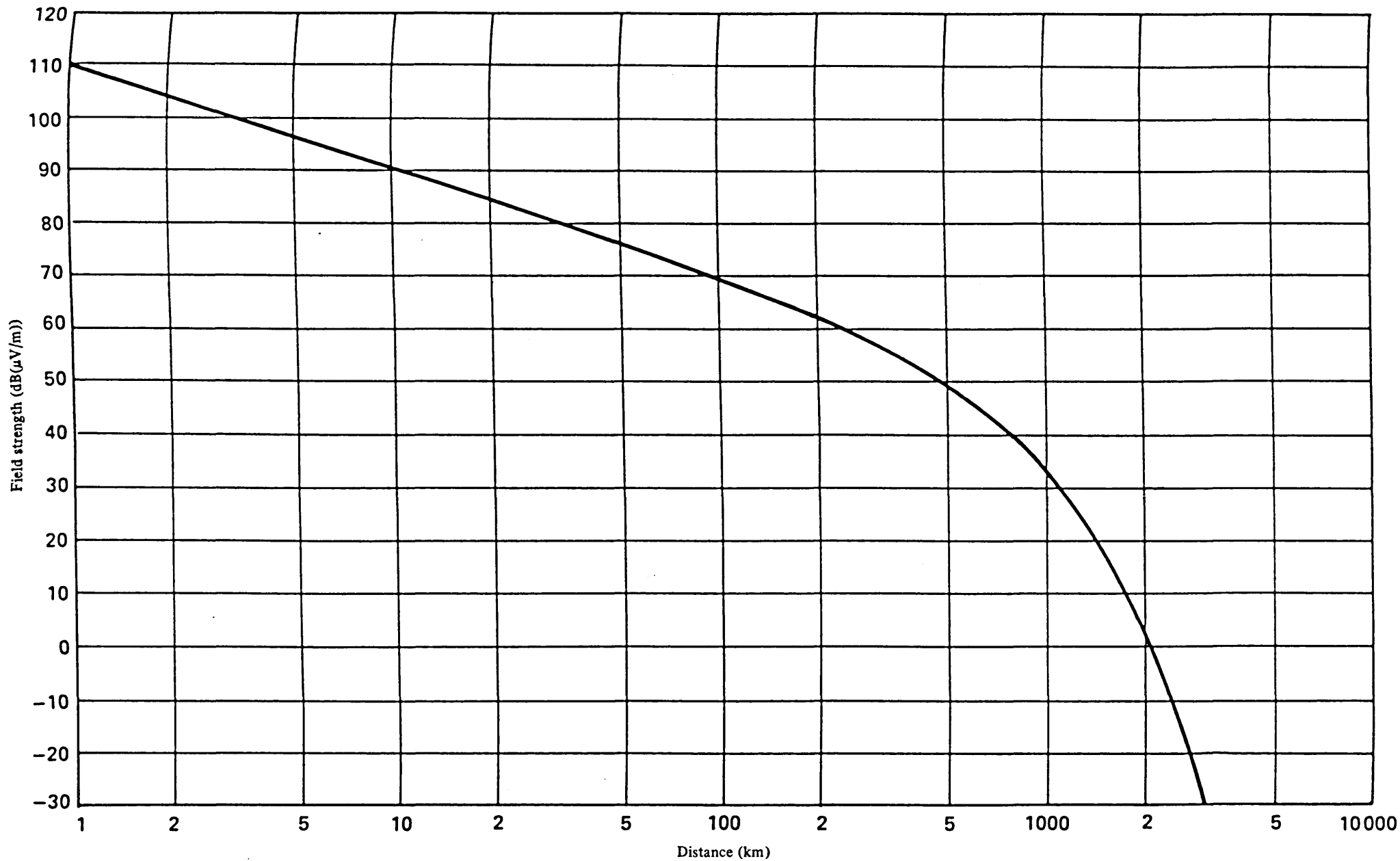


FIGURE 3.1

*Ground-wave propagation curve for 300 kHz  
(sea water, average salinity, 20°C with  $\sigma = 5 \text{ S/m}$ ,  $\epsilon = 70$ )*

#### 1.4 *Protection ratio*

The following values of protection ratio (see No. 164 of the Radio Regulations) were applied:

Frequency separation between wanted and interfering signal in kHz	Protection ratio in dB
0	15
0.5	-39
1.0	-60
1.5	-60

No account was taken of protection ratio requirements for frequency separations exceeding 1.5 kHz.

#### 1.5 *Multiple interference*

For a given compatibility calculation only the interference contribution from the strongest interfering signal was considered.

#### 1.6 *Channel spacing*

0.5 kHz.

#### 1.7 *Radiated power*

The effective monopole radiated power (e.m.r.p.) (see No. 157 of the Radio Regulations) was derived from the minimum field strength to be protected at the edge of the coverage area.

### 2. *Compatibility between the maritime radionavigation service (radiobeacons) and the aeronautical radionavigation service*

In applying the planning program as part of the computer program package for the establishment of the Plan, a frequency for stations of the maritime radionavigation service was selected on the basis of criteria contained in this Annex. In applying in the second stage the incompatibility analysis program as part of the computer program package, the final compatibility analysis vis-a-vis stations of the aeronautical radionavigation service to which this band is also allocated on a permitted basis was carried out on the basis of the Technical Standards of the IFRB. This analysis identified those cases where there was a probability of harmful interference in either direction.

## APPENDIX 1 TO ANNEX 3

### Criteria to be Used in Identifying Administrations Whose Assignments may be Affected by a Modification to the Plan

The following criteria shall be used in identifying administrations with which an agreement is required because their assignments may be affected by a modification to the Plan.

For the purpose of this Annex the following definitions are used:

- the service area of a maritime radiobeacon station is the area limited on the one hand by the coast and on the other hand by the service area radius which is indicated in the Plan;
- the service area of a station of the aeronautical radionavigation service is the area around this station limited by the service area radius.

1. *Maritime radionavigation service (radiobeacons) of a country in the European Maritime Area*

The service provided by a station for which an assignment is in conformity with the Plan may be affected by a modification to the Plan when the wanted-to-interfering signal ratio at any point in the service area resulting from the proposed modification to the Plan is less than the protection ratio indicated in section 1.4 of Annex 3. The calculation of the protection ratio is based on the criteria in Annex 3.

2. *Maritime radionavigation service (radiobeacons) of a country outside the European Maritime Area or aeronautical radionavigation service*

The service provided by a station in the maritime radionavigation service of a country outside the European Maritime Area or in the aeronautical radionavigation service, for which an assignment is recorded in the Master Register, may be affected by a modification to the Plan when the application of the relevant Technical Standards of the IFRB produces an unfavourable finding.

APPENDIX 2 TO ANNEX 3

**The Transmission of Differential Omega Corrections**

According to No. 466 of the Radio Regulations, it is possible to add information on the long dash of a radiobeacon transmission by using narrow-band techniques in order to provide differential Omega corrections, provided that the prime function of the radiobeacon is not significantly degraded.

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## FINAL PROTOCOL<sup>1</sup>

At the time of signing the Final Acts of the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985), the undersigned delegates take note of the following statements made by signatory delegations.

### No. 1

(Original: French)

*For Portugal:*

The Delegation of Portugal to the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985) reserves the right of its Government to take such measures as it deems necessary to safeguard its interests should Members fail in any way to abide by the provisions of the Conference or if reservations made by other countries jeopardize the operation of its radiocommunication services.

### No. 2

(Original: English)

*For the Republic of Malta:*

The Maltese Delegation to the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985) declares that its Administration reserves the right to take such action as it considers necessary to safeguard its interests should any Member fail in any way to comply with the provisions of the Agreement, its Annexes and Protocol attached to it or should reservations by other countries jeopardize Malta's maritime radionavigation service.

### No. 3

(Original: French)

*For the People's Democratic Republic of Algeria, the Socialist People's Libyan Arab Jamahiriya, the Kingdom of Morocco and Tunisia:*

The Delegations of the above countries to the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985) hereby state that the signature and possible subsequent ratification by their respective Governments or competent authorities of the Final Acts of the Conference are not valid with regard to the Zionist entity referred to in Annex 1 to the Convention under the alleged name of Israel and do not in any way imply recognition of it.

### No. 4

(Original: French)

*For Tunisia:*

In signing the Final Acts of the Regional Administrative Conference for the planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985), the Tunisian Delegation reserves its Government's right to take any measures it may consider necessary to safeguard its interests should any other country fail in any way to observe the provisions laid down in the Final Acts or should the reservations made by another country jeopardize the radiocommunication services of the Tunisian Republic.

### No. 5

(Original: French)

*For the Kingdom of Morocco:*

The towns of Sebta (Ceuta) and Melillia (Melilla), together with their areas, are an integral part of the territory of the Kingdom of Morocco.

Consequently, the Moroccan Administration reserves all of its country's rights with regard to the frequency assignments for maritime radiobeacons included in the Plan on behalf of Spain in the above-mentioned territories.

Signature of the Final Acts of this Conference in no way implies recognition of Spanish sovereignty over these territories.

<sup>1</sup> *Note by the General Secretariat:* The texts of the Final Protocol are shown in the chronological order of their deposit. In the table of contents these texts are grouped in the alphabetical order of country names.

## No. 6

(Original: French)

*For France:*

In signing the Final Acts of the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985), the Delegation of France reserves its Government's right to take whatever action it may consider necessary to ensure the protection and proper operation of its maritime radionavigation service which uses the phase measurement multifrequency system.

## No. 7

(Original: English)

*For the Federal Republic of Germany, Denmark, Finland, Ireland, Norway, the Kingdom of the Netherlands, the United Kingdom of Great Britain and Northern Ireland, Sweden and Turkey:*

Recognizing the vital contribution made by maritime radiobeacons to safety at sea, the above-mentioned Contracting Members view with concern the decision of the Conference to defer the entry into force of the Agreement until 1992. There will therefore be a period of seven years before the new Frequency Plan for maritime radiobeacons can be implemented and during that period the beacons must continue to operate under the Paris Arrangement of 1951.

The above-mentioned Contracting Members therefore urge all Contracting Members and the IFRB to do everything possible to preserve the integrity of the new Plan so that when it is brought into use maritime radiobeacons can continue to contribute to safety at sea in the European Maritime Area.

## No. 8

(Original: Spanish)

*For Spain:*

The Spanish Delegation urges the other Delegations attending the Conference to impress upon their administrations the need to safeguard the integrity of the new Plan until the date on which it enters into force.

## No. 9

(Original: Spanish)

*For Spain:*

The Spanish Delegation to this Conference rejects the reservation bearing the No. 5 in the Final Protocol and entered by the Delegation of the Kingdom of Morocco with regard to the entry of frequencies for the stations of Ceuta and Melilla in the Plan.

Ceuta and Melilla are Spanish cities and as such constitute part of the national territory. Spanish sovereignty over them therefore cannot be questioned.

## No. 10

(Original: English)

*For the State of Israel:*

The declarations made by certain Delegations in No. 3 of the Final Protocol, being in flagrant contradiction with the principles and purposes of the International Telecommunication Union, and therefore void of any legal validity, the Government of Israel wishes to put on record that it rejects these declarations outright and will proceed on the assumption that they can have no validity regarding the rights and duties of any Member State of the International Telecommunication Union. In any case, the Government of Israel will avail itself of its right to safeguard its interests should the Governments of these Delegations in any way violate any of the provisions of the Final Acts of the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985).

The Delegation of Israel further notes that declaration No. 3 does not refer to the State of Israel by its full and correct name. As such it is totally inadmissible and must be repudiated as a violation of recognized rules of international behaviour.

*(The signatures follow)*

*(The signatures following the Final Protocol are those shown on pages 7 and 8)*



## RESOLUTION No. 1

### **Application of Articles 4, 5 and 6 of the Agreement Before its Entry into Force**

The Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985),

#### *considering*

- a) that, in accordance with its agenda, it has adopted an Agreement and an associated Plan for the maritime radionavigation service (radiobeacons) in the band 283.5 - 315 kHz;
- b) that some administrations may need to modify the characteristics of assignments appearing in the Plan or to add new assignments to the Plan or to notify assignments included in the Plan before the Agreement enters into force;
- c) that some administrations may need to notify frequency assignments in the aeronautical radionavigation service in the band 283.5 - 315 kHz before the Agreement enters into force;
- d) that means must be provided, before the date of entry into force of the Agreement, to permit modifications to the Plan and to ensure that the proposed uses of the aeronautical radionavigation service in the relevant band are compatible with the Plan;

#### *resolves*

1. that, pending the entry into force of the Agreement, administrations and the IFRB shall apply the procedures set out in Article 4 of the Agreement for modifications of the Plan;
2. that, during the same period, administrations and the IFRB shall apply the procedures set out in Articles 5 and 6 of the Agreement for the notification, examination and recording of frequency assignments in the relevant frequency band, as well as the provisions of paragraph 3 below;
3. that the transitional procedure in the Annex to this Resolution shall be applicable during the period in question.
4. that new radiobeacon stations of the maritime radionavigation service brought into use before the date of entry into force of the Agreement shall conform to the characteristics specified in the Plan except as regards the frequency;
5. that when selecting frequencies for use in the transitional period, administrations shall take account of the fact that some receivers in current use are less selective than the equipment to be used in future.

## ANNEX TO RESOLUTION No. 1

### **Transitional Procedure Applicable to Frequency Assignments Notified Under the Terms of Article 5 of the Agreement Before its Entry into Force**

1. When an administration proposes to modify the characteristics of an assignment entered in the Master Register in order to make it consistent with the Plan, or when an administration wishes to bring into service an assignment in conformity with the Plan, it shall notify that assignment in accordance with Article 5 of the Agreement.
2. The IFRB shall examine such notifications relating to assignments entered in the Master Register on the date of receipt of the notification and shall inform the notifying administration of any incompatibility with assignments of other administrations.

3. The notifying administration shall endeavour to secure the agreement of the administrations identified under the terms of paragraph 2 above.
4. When the agreement of the administrations concerned has been obtained, the assignment may be brought into service in accordance with the Plan, and, if necessary, the corresponding assignment which has been the subject of the modification shall be deleted from the Master Register.

## RESOLUTION No. 2

### **Updating of the Master International Frequency Register with Regard to Assignments to Stations of the Maritime Radionavigation Service (Radiobeacons) in the Band 283.5 - 315 kHz to Permit the Entry into Force of the Agreement and Associated Plan**

The Regional Administrative Conference of the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985),

#### *considering*

- a) that, in accordance with its agenda the present Conference has adopted an Agreement and an associated Plan for the maritime radionavigation service (radiobeacons) stations in the band 283.5 - 315 kHz;
- b) that under the provisions of Article 5 of the Agreement prepared by the present Conference, the Contracting Members shall notify the IFRB of frequency assignments to stations of the planned service before they are brought into operation;
- c) that the administrations of Contracting Members and the IFRB should have an appropriate procedure for implementing the Plan agreed at the present Conference with the least possible difficulty;

#### *resolves*

1. that, 90 days prior to the entry into force of the Agreement, administrations shall notify the IFRB of the assignments in conformity with the Plan that are intended to replace the corresponding assignments entered in the Master Register;
2. that if, in examining the frequency assignments notified by administrations under the terms of paragraph 1 of this Resolution, the Board arrives at a favourable finding under No. 1241 of the Radio Regulations, these assignments shall retain the original date entered in column 2;
3. that, 30 days after the date of entry into force of the Agreement, assignments entered in the Master Register for which the IFRB has not received a notice concerning the entry into service of the corresponding assignment in the Plan shall be retained in the Master Register, with a remark in the appropriate column to show that the assignment in question is not entitled to any protection in relation to assignments that are in conformity with the Agreement and shall not cause any harmful interference to such assignments. Each administration concerned shall be advised of such action;
4. that if, upon expiry of the above-mentioned period, the Board receives a notice under the terms of paragraph 1 above, it shall delete the corresponding assignment from the Master Register;

#### *invites the IFRB*

to provide administrations with all the necessary assistance in the implementation of the provisions of this Resolution.

RESOLUTION No. 3

**Choice Between the FSK and MSK Techniques  
for Data Transmissions from Maritime Radiobeacons**

The Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985),

*considering*

- a) that there would be operational advantage in employing radiobeacons for the transmission of data to ships;
- b) that this could be achieved by the inclusion in the emissions from such beacons of periods of data transmissions employing the frequency shift keying technique (FSK) using a shift of  $\pm 85$  Hz or the minimum shift keying technique (MSK) using a shift of  $\pm 10$  Hz;
- c) that there may be operational advantage in being able to take an automatic radio bearing for a short period during or immediately adjacent to the data transmission;
- d) that there are unresolved doubts as to which is the better technique;
- e) that further studies and practical tests on the above-mentioned techniques are required;
- f) that the choice of either technique will not affect the frequency plan for maritime radiobeacons as adopted by this Conference;
- g) that a single world-wide standard technique is desirable;

*resolves*

1. to invite the CCIR to undertake further studies on the technical, operational and economic aspects of the above techniques and to report the outcome to the World Administrative Radio Conference for the Mobile Services, 1987;
2. to invite administrations to take part in the CCIR studies and to arrange or participate in further operational trials;
3. to invite the Administrative Council to include the matter in the agenda for the World Administrative Radio Conference for the Mobile Services, 1987;
4. to invite the World Administrative Radio Conference for the Mobile Services, 1987, to consider the matter and, if possible, to choose between the FSK and MSK techniques;

*instructs the Secretary-General*

to draw the attention of the International Maritime Organization (IMO) and the International Association of Lighthouse Authorities (IALA) to this Resolution and invite them to participate in the studies.

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## RECOMMENDATION No. 1

### **Minimum Technical Characteristics and Conditions to be Applied for Maritime Radiobeacons and Radio-Direction Finders in the Band 283.5 - 315 kHz**

The Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985),

#### *considering*

- a) that in accordance with its agenda it adopted an Agreement and an associated Plan for the maritime radionavigation service (radiobeacons) in the band 283.5 - 315 kHz;
- b) that direction-finders installed in ships in compliance with the International Convention for the Safety of Life at Sea, 1974, as amended in 1981, are required to operate on additional frequencies using other classes of emissions;

#### *recommends*

that administrations take account of the technical characteristics and conditions contained in Annexes A, B and C to this Recommendation.

## ANNEX A

### **Minimum Technical Characteristics for Maritime Radiobeacons**

#### ***ANTENNA AND EARTH SYSTEM***

- 1. The antenna and earth system should be so designed as to restrict radiation of horizontally polarized waves and of signals directed towards the ionosphere. A vertical or T antenna should be used for preference.
- 2. The earthing system or counterpoise associated with the antenna should, as far as possible, preserve the symmetry of the radiation system as a whole.
- 3. To minimize their influence on the radiation pattern, horizontal power and telecommunication lines less than 100 metres from the antenna should be underground.

#### ***TRANSMITTERS***

##### *Frequencies*

- 4. The frequency tolerance specified in Appendix 7 to the Radio Regulations is applicable to the transmitters of A1A emissions.
- 5. Transmitters of F1B emissions should maintain their assigned frequency with a tolerance of  $\pm 10$  Hz.

6. Appendix 8 to the Radio Regulations specifies the maximum permitted spurious emission power levels of all transmitters.

#### *Modulation and structure of signal*

7. The signal transmitted from a maritime radiobeacon comprises: an identification signal transmitted twice using Morse code with A1A emission; a long dash for direction finding purposes; and an optional data transmission sequence with F1B emission.

8. The basic sequence of the transmission is composed as follows:

- an identification signal in Morse code transmitted at least twice, followed by a long dash of at least 25 seconds, the total transmission time being 38 seconds;
- optional F1B data messages transmitted from the station (or from stations operating in groups) in the next 22 seconds; or, if no data are transmitted, this period may be used to extend the long dash;
- when radiobeacons are grouped together, the stations transmit the A1A message sequentially in consecutive minutes.

#### *Accuracy of timing*

9. All maritime radiobeacons operating in groups should be controlled by a device ensuring the accuracy of the transmission schedules to within  $\pm 2$  seconds.

#### *Field strength measurements*

10. When a maritime radiobeacon is brought into service or if alterations are made to the equipment or antenna and earth system of a maritime radiobeacon in service, field strength measurements should be made to adjust the radiated power to the correct values to give the nominal day ranges with a 95% probability ( $\pm 3$  dB).

11. Such measurements should be repeated at regular intervals not exceeding one year.

#### *Verification of radiobeacon emissions*

12. Each administration should ensure that:

- a) the field strength does not vary by more than  $\pm 3$  dB from the nominal value determined in accordance with paragraph 10;
- b) the transmission frequency is maintained within the specified tolerance;
- c) the transmitted signal is correct;
- d) for maritime radiobeacons operating in groups, the timing accuracy is maintained with the specified limits.

#### **STANDBY EQUIPMENT**

13. Maritime radiobeacons should have the necessary standby equipment to prevent any stoppage due to the failure of the electricity supply, the transmitter or the timing device.

## ANNEX B

### Minimum Technical Characteristics for Maritime Radio Direction-Finders

#### *FREQUENCY BANDS*

1. Maritime radio direction-finders should permit bearings to be taken on class A1A emissions in the maritime radiobeacon frequency band between 283.5 kHz and 315 kHz.
2. Maritime radio direction-finders may also be equipped to receive, decode and display the additional information which a radiobeacon is allowed to transmit as a further aid to navigation. Such transmissions should be on the radiobeacon assigned frequency and should be of class F1B.

#### *SELECTIVITY*

3. For class of emission A1A, the overall radio frequency and intermediate frequency selectivity of the direction-finder should be as follows:
  - a) for an attenuation of 6 dB, the bandwidth is equal to or less than 210 Hz;
  - b) for an attenuation of 30 dB, the bandwidth is less than 460 Hz;
  - c) for an attenuation of 60 dB, the bandwidth is less than 960 Hz.
4. The spurious response rejection ratio should be 80 dB or higher.

#### *SENSITIVITY*

5. A field strength equal to 50  $\mu\text{V/m}$  should produce a signal in the headphones of a receiver with an S/N ratio of 20 dB or higher, sufficient to identify and indicate the bearing of the transmitting station with a readout accuracy within  $\pm 1$  degree of the correct bearing.

#### *MISCELLANEOUS CHARACTERISTICS*

6. Maritime radio direction-finders should include means of recognizing A1A identification signals.
7. The receiver should maintain the frequency to which they are tuned within a tolerance of  $\pm 50$  Hz.
8. Maritime radio direction-finders should be provided with means of indicating the bearing of the wanted signal. After allowing for any site error, the relative bearing indicated by the receiver should be within  $1^\circ$  of the correct bearing for all measurements made.
9. The radio direction-finder should be capable of detecting the presence of interference which may cause a bearing to be incorrect.

## ANNEX C

### Technical Conditions for the Installation and Calibration of Radio Direction-Finders in Vessels<sup>1</sup>

1. The antenna assembly should be mounted as near as practicable to the vessel's centre line and should be as remote as is practicable from large movable metal objects and conductors such as other antennas, cranes, derricks and wires.
2. The sense-finding antenna should be as short as practicable.
3. The connecting cables between the antenna system and the apparatus should be electromagnetically screened. All joints should be watertight.

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<sup>1</sup> It should be noted that direction-finders installed in ships which are in compliance with the International Convention of the Safety of Life at Sea, 1974, as amended in 1981, are installed and calibrated in compliance with that Convention.

4. The receiver should be earthed to the hull of the vessel by means of a conductor with as low a resistance as possible.
5. As far as possible, the direction-finder should be so located that mechanical or other noise will cause as little interference as possible to the efficient determination of bearings.
6. A means of providing information on the ship's magnetic or gyro compass heading should be provided in the vicinity of the direction-finder.
7. The calibration curve of the direction-finder should be determined before the latter is brought into use and whenever the position of the antennas or the conductors referred to above is changed or the superstructure of the vessel is altered substantially.
8. The calibration of the direction-finder should be checked at intervals not exceeding 12 months and the direction-finder should be recalibrated if the calibration curve is found to be substantially in error.
9. When the radio direction-finder is calibrated, the frequency used should be as close as possible to 300 kHz.
10. The calibration curve should preferably be determined by means of bearings on short range radiobeacons specially provided for the calibration of radio direction-finders.

## RECOMMENDATION No. 2

### Use of Maritime Radionavigation Hyperbolic Systems

The Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area (Geneva, 1985),

#### *considering*

- a) that the operation of the maritime radionavigation service has undergone a thorough reorganization with regard to maritime radiobeacons;
- b) that there is a trend in maritime radionavigation techniques in the band 283.5 - 315 kHz towards the adoption of new systems;
- c) that a requirement for a phase measurement multi-frequency radionavigation system has arisen in the band 283.5 - 315 kHz;
- d) that the CCIR is studying the possibility of using radiobeacons in the hyperbolic mode;

#### *recommends*

1. that these new requirements should be taken into account;
2. that a future competent World Administrative radio conference should consider the revision of the relevant articles of the Radio Regulations and the allocations given in the table in Article 8 of the Radio Regulations;

#### *invites the Administrative Council*

to include consideration of the relevant modifications to the Radio Regulations in the agenda of the World Administrative Radio Conference for the Mobile Services in 1987;



*invites the CCIR*

to continue the study of this matter;

*invites the administrations*

to submit contributions on this subject;

*instructs the Secretary-General*

to bring this Recommendation to the attention of the International Maritime Organization (IMO) and the International Association of Lighthouse Authorities (IALA).

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