Electronic Communications Committee (ECC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

**FORMATS FOR SUBMISSION OF INFORMATION FROM ADMINISTRATIONS
TO THE OFFICE ON CONDITIONS FOR OPERATION
OF EARTH STATIONS ABOARD VESSELS
WITHIN THE SEPARATION DISTANCES IDENTIFIED IN
ITU RR RESOLUTION 902**

"The ESV Contour Report"

Mainz, January 2005

EXECUTIVE SUMMARY

This report provides formats for submission of data from CEPT administrations to the Office on conditions for operation of ESVs within the separation distances of 300 km and 125 km from the coast for operation in the 5 925-6 425 MHz or the 14-14.5 GHz band respectively. Such information would typically be in the form of contours within which specific operational characteristics apply. ESV operators will have access to this type of information on the Office website.

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**Formats for submission of information from administrations to the Office
on conditions for operation of Earth stations aboard vessels within the separation distances
identified in ITU RR Resolution 902**

1   INTRODUCTION

This Report supplements Annex A and B of each Decision on ESVs under ITU RR Resolution 902, with transmissions within the frequency bands from 5 925 to 6 425 MHz and from 14 to 14.5 GHz, of which only the upper half of the latter band is shared with terrestrial services in CEPT. It specifies the format of the parameters (areas and emissions limits) to be submitted to The Office, for publication on its website, by concerned Administrations, permitting ESV emissions under certain conditions within the 125 km distance from the coast in the 14 GHz frequency band and within the 300 km distance from the coast in the 6 GHz frequency band.

The files containing the parameters declared by the concerned Administrations would be directly inserted and removed, with any usual FTP software, by each concerned Administration on The Office FTP server, in the area which is allocated to it, without the need for any additional processing by The Office.

The files provided by the concerned Administrations will be directly usable by ESV operators for the generation of the data bases suitable for their ESVs and taking account the various limitations from different countries which apply in each location.

The present specified format give the possibility to define simple contours and more complex contours when needed.

The format may also be appropriate for information submitted by Administrations to The Office under Annex B.

The Office will make available to the ESV operators on its FTP server the information submitted by the concerned Administrations.

An illustrative example of a contour with its associated data files is given in the Annex 1 at the end of this Report.

2   NOTATIONS

Within the present annex the following notations are used:

<name>	angle brackets ("<", ">") are used to designate a field for the string of characters (text value) representing the value of the named variable, e.g. "UK" for a "country code" or a decimal value: "51,432" for a "latitude",
+	"+" is the concatenation operator. <a>+<b> is the concatenation of the text values for the successive named variables "a" and "b",
:=	":=" is the definition operator. <a>:=<b> means that the text value of the named variable "a" is by definition equal to the text value of the named variable "b",
" "	quotation-marks quotes (") are used to enclose literal text (e.g. "A_850")
|	"|" is the operator for alternatives. <a>|<b> may be equal to <a> or <b>
Arctan(x)	arc tangent function of the variable x
log(x)	decimal logarithm function of the variable x.
$max(x_1, x_2)$	maximum value of the variables x_1 and x_2..

3   DEFINITIONS

For the purposes of the present document, the following terms and definitions apply:

4/6 GHz band ESV: ESV transmitting within the frequency band from 5 925 MHz to 6 425 MHz.

14 GHz band ESV: ESV transmitting within the frequency band from 14.25 GHz to 14.5 GHz.

Connex area: An area on the surface of the Earth is connex if between any points *A* and *B* within the area there exists a continuous path such that all the points of the path are within the area.
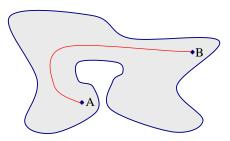
Figure 1: Example of a connex area

Convex area: An area at the surface of the Earth is convex if between any pair of points *A* and *B* within the area all the points of the straight line from *A* to *B* are within the area.

Figure 2: Example of a convex area

Country coast: the coast of the country main land and the coast of any island of the country and also the sides of the rivers, inland waterways and any other internal water (e.g. lakes). The coast shall be the low-water mark as officially recognized by the coastal State.

4   ABBREVIATIONS AND SYMBOLS

For the purposes of the present document, the following abbreviations and symbols apply:

CRC	Cyclic Redundancy Check (checksum)
e.i.r.p	equivalent isotropically radiated power
dg	degree (angle unit)
EN	European standard (Norm)
ESV	Earth Station on board a Vessel
gr	grade (angle unit)
km	kilometer
NM	nautical mile (1 NM = 1,852 km)
RR	Radio Regulations.

5   TOPOLOGY

5.1   General

Concerned Administrations shall segment their country coast and their lands with waterways into "sectors", shall partition sectors into non overlapping "zones" for each frequency band and shall specify the transmission parameter limitations associated to each zone.

5.2   Sectors

The coast of the country and its lands with waterways shall be partitioned into one or more geographical sectors (see example on Figure 3). Each sector shall be connex.

Note 1: A single contour around an island may be seen as a unique sector of a zone.

Note 2: The organization into sectors has been chosen so that when necessary:

- the parameters applicable within a sector may be modified without modification of the other sectors,

- any sector may be divided into 2 or more sectors without modification of the other sectors,

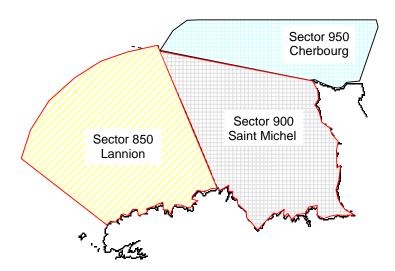- sectors may be gathered without modification of the other sectors.

Figure 3: Example of sectors along a coast

The sectors along a coast of the country should be named and numbered with successive numbers, not necessarily consecutive, in order in to easily identify and locate each sector.

Each sector along a coast shall be defined by:

1. an origin point P_o and an ending P_e both on the coast,

2. the coast of country from P_o and P_e, and

3. a convex polygon from P_o to P_e and (see Figures 7, 8 and 9).

The origin point P_o and the ending P_e shall be such that going along the coast from P_o to P_e the sea shall be on the left hand side and the land on the right hand side.

The polygon from P_o to P_e ("sector contour") shall be defined by the list of its points.

Sectors may be defined for rivers, inland waterways and any other internal water (e.g. lakes). The contour ("sector contour") of such sector shall be a close contour and shall be defined by the list of its points.

The sectors of the country shall not overlap each other.

Note: Sectors of different countries may overlap each other.

Any sector of a country may cover parts of the country land or parts of other countries' lands (e.g. islands or parts of the coast). For simplicity of the polygon, any sector may cover areas where no limitation from the concerned Administration may apply.

Where no sector is defined by the concerned Administration no transmission is permitted within the 125 km of the country coast for 14 GHz band ESVs and within the 300 km of the country coast for 4/6 GHz band ESVs, and within the country.

5.3   Zones

Any sector shall consist in one ore more zones, each characterized by a frequency band, a priority level and transmission parameters limitations.

The zones' priority level numbers shall be positive integer numbers. The lowest priority level number shall be 1. The higher will be the priority level number the higher shall be the priority level.

In any sector, at any frequency the zones of same priority level shall not overlap each other.

Note: In any sector, zones at different frequencies may overlap each other. In any sector, zones at same frequencies but at different priority levels may overlap each other.

In any sector, where within a same frequency band several zones of different priority levels overlap each other then the transmission parameters limitations of the highest level zone shall apply.

For each zone, a transmission parameter shall be used to indicate whether:

- transmissions are permitted ("ON") within the zone , or
- transmissions are not permitted ("OFF") within the zone , or

Transmissions within some "OFF" zones are subject to special permissions to obtain from local authorities. In that case the "note file" giving more detail on the procedure to follow shall be indicated.
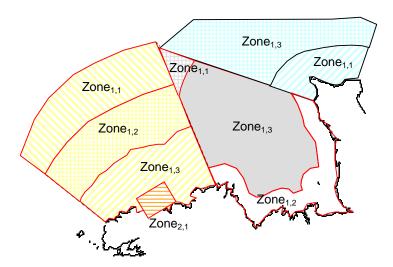

Figure 4: Example of sectors and zones $Z_{l,n}$ where "l" is the priority level and "n" is the number

Each zone shall be connex.

The border of any zone ("zone contour") shall consist of a set of points and segments of lines between consecutive points. Segments are part of the border of the contour.

Each zone contour shall be defined by the list of the consecutive points of the contour, in clockwise order.

In any sector, in any frequency band, where no zone is defined by the concerned Administration no transmission is permitted within the 125 km of the country coast for 14 GHz band ESVs and within the 300 km of the country coast for 4/6 GHz band ESVs, and within the country.

5.4   Order of the points of a contour

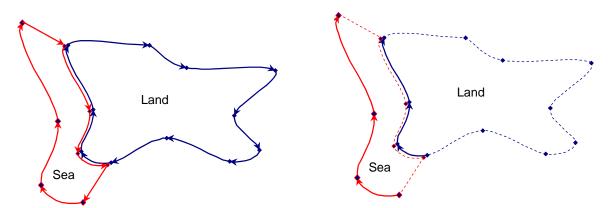The points of any closed contour or a part of it shall be listed in clockwise order.

Figure 5: Example of a closed contour   **Figure 6: Example of a open contour**

Note: Any part of a contour may be within the sea, along the coast or within the land.

5.5   Distances

Within each data file all the distances shall be given either in kilometers (km) or in nautical miles (NM). The appropriate parameter of the data file shall be used to indicate the selected unit. The number of digits after the comma shall be limited to 3.

5.6   Latitudes and longitudes

Within the data files all latitudes and longitudes shall be given in decimal degrees (°) or grades (gr). The number of digits after the comma shall be limited to 5.

Latitudes shall be positive towards the North Pole and negative towards the South Pole.

Longitudes shall be counted from the Greenwich meridian. Longitudes shall be positive towards the East and negative towards the West. Longitudes shall be numbered from (-180° to +180°) or from (-200 gr to +200 gr).

5.7   Elevations

Within the data files all elevations shall be given in decimal degrees (°). The number of digits after the comma shall be limited to 1.

5.8   Coordinate system

The longitudes and latitudes of points shall refer to the World Geodesic System WGS84 coordinate system used by GPS and adopted by the International Hydrographic Organization (IHO).

Note: National Administrations, ESV network operators and ESV operators shall take care of the offsets that may exist between the WGS84 coordinates and some national coordinates indicated on the maps.

5.9   Type of zone contours

5.9.1   General

Three different types of zone contours may be used:

1. "open contours relative to the country coast", each defined by a minimum distance and a maximum distance to the country coast and by the sector border,

2. "open contours relative to a country coast contour", each defined by a minimum distance and a maximum distance to a country coast contour, defined by a list of points, and by the sector border,

3. "closed contours", each defined by a list of points.

A fourth type is added:

4. for zones defined by a references (e.g. "berths 12-16").

Each type of contour is characterized by some of the following parameters:

- the type of contour,
- the minimum distance [km or NM],
- the maximum distance [km or NM],
- the contour number, i.e. the reference of the associated list of points,
- a list of points (longitude, latitude),
- a reference of a specific zone.

5.9.2   Open contour relative to the country coast

The zone contour is defined by a minimum distance (d_{min}) and a maximum distance (d_{max}) to the country coast and by the sector border.

Note: The part of the country coast used for the zone contour determination may be wider than the part of the country coast or the coast contour used for the definition of the sector.

The parameters of that contour shall have the following values:

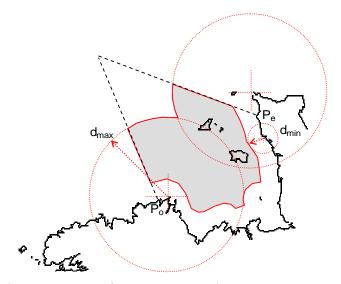| Parameter	Value
Type of contour	01
Minimum distance [km or NM]	from 0 km to 125 km for 14 GHz band ESVs or to 300 km for 4/6 GHz band ESVs
Maximum distance [km or NM]	from the minimum distance to 125 km for 14 GHz band ESVs or to 300 km for 4/6 GHz band ESVs
Contour number	0 (for no contour)

Figure 7: Example of open contour relative to the country coast

Note: Annex 1 gives an example of such a contour.

5.9.3   *Open contour relative to a country coast contour*

The zone contour is defined by a minimum distance (d_{min}) and a maximum distance (d_{max}) to a country coast contour, defined by a list of points, and by the sector border.

Note 1: The country coast contour may be wider than the part of the country coast or the coast contour used for the definition of the sector.

Note 2: The points of any coast contour may not be exactly on the country coast but anywhere (e.g. within the land or the sea).

The parameters of that contour have the following values:

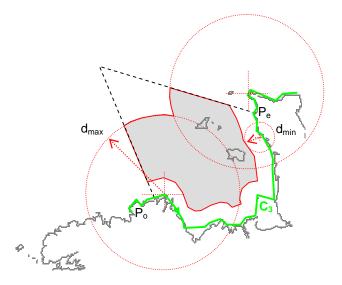| Parameter	Value
Type of contour	02
Minimum distance [km or NM]	from 0 km to 125 km for 14 GHz band ESVs or to 300 km for 4/6 GHz band ESVs
Maximum distance [km or NM]	from the minimum distance to 125 km for 14 GHz band ESVs or to 300 km for 4/6 GHz band ESVs
Contour number	e.g. 3 for contour #3
Coast contour list of points	longitude and latitude of each point

Figure 8: Example of open contour relative to a country coast contour

5.9.4 Closed contour

The zone contour is defined by a list of points.

Note: The points of any close contour may be anywhere within the land or the sea (e.g. for reducing the number of points of a contour).

The parameters of that contour have the following values:

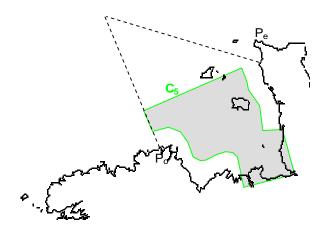| Parameter	Value
Type of contour	03
Contour number	e.g. 5 for contour #5
Contour list of points	longitude and latitude of each point

Figure 9: Example of closed contour

5.9.5 *Zones defined by references*

The zone is defined by a reference (e.g. "berths 12-16").

Note 1: This "type of contour" involving human action for its application and risk of misapplication is not recommended and should only be used in local areas where coordinates may not have the necessary resolution e.g. due to ambiguity in the conversion to datums used for local mapping.

Note 2: This type of contour may be applicable for identifying of areas of operation inside ports.

The parameters of that particular "type of contour" have the following values:

Parameter	Value
Type of contour	04
Zone reference	a string of characters (e.g. "berths 12-16", "within 100 m of bridge")

5.9.6 *Case of inland waterways*

The present format is not limited to sectors and zones covering oceans, seas and mouths of rivers. It can be and may be used for inland waterways, rivers and lakes as shown on figure 10.

Figure 10: Example of zones (red) covering inland waterways (bleu)

5.10 EIRP and EIRP density limitations

In each zone, the maximum permissible EIRP and the EIRP density, independently of each other, may be either:

- constant, or

- variable with the minimum distance (d_{min}) [km or NM] either:

  - to the country coast, or

  - to a specific contour ("protected contour"), and/or

  - to specific points ("protected points")

For the constant and variable limits four parameters EIRP_0, EIRPD_0, α *and* β shall be used to define:

- the EIRP limit:

    (1) : $$\mathrm{EIRP\ limit} = \mathrm{EIRP_O} + \alpha \cdot \log\left(d_{\min}\right)$$

- and the EIRP density limit:

    (2) : $$\mathrm{EIRP\ density\ limit} = \mathrm{EIRPD}_0 + \beta \cdot \log\left(d_{\min}\right)$$

Note: When the unit for all distances is the kilometer then: $\log\left(\dfrac{d_{\min[km]}}{1_{[km]}}\right) = \log\left(d_{\min[km]}\right)$ and when the unit for all

distances is the nautical mile then: $\log\left(\dfrac{d_{\min[nm]}}{1_{[nm]}}\right) = \log\left(d_{\min[nm]}\right)$

The units shall be:

- the dBW for the *EIRP_limit* and *EIRP₀*,
- the dB(W/MHz) for the *EIRP_density_limit* and *EIRPD₀*,
- the dB for α and *β*, r

In case of a constant limit the value of the second parameter (α *or* β) is zero.

In case of a variable limit ($\alpha \neq 0$ *or* $\beta \neq 0$) a parameter shall be used to indicate to which contour and/or points the minimum distance of the ESV has to be determined. The same contour and/or list of points for the EIRP and the EIRP density limitations shall apply.

The parameters for the EIRP and EIRP density limitations within a zone shall be the following:

Parameter	Value
EIRP limit parameters:	EIRP₀ [dBW] and α [dBW/km or dBW/NM]
EIRP density limit parameters:	EIRPD₀ [dBW/MHz] and β [dB]

Contour number for EIRP and EIRP density limitations	0 when $\alpha = 0$ and $\beta = 0$
	
	0 when the country coast is used and
	       when $\alpha \neq 0$ *and / or* $\beta \neq 0$
	
	$\neq 0$ when a "protected contour" and/or "protected points" are used and
	       when $\alpha \neq 0$ *and / or* $\beta \neq 0$

"protected contour" list of points	longitude and latitude of each point
"protected points" list of points	longitude and latitude of each point

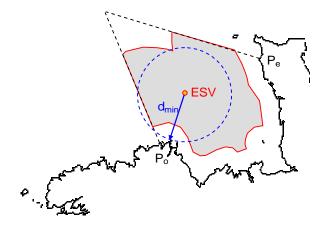A "protected points" list of points may consist of a single point.

Figure 11: Example of variable EIRP or EIRP density relative to the country coast
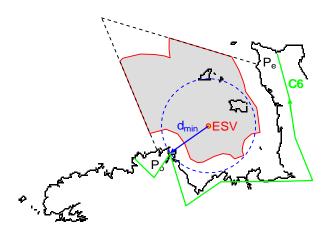

Figure 12: Example of variable EIRP or EIRP density relative to a country coast contour

5.11   Minimum elevation

In each zone, the minimum ESV antenna main beam axis elevation ("minimum elevation") may be either:

- constant, or
- variable with the distance [km or NM] either:
    - to the country coast ("protected coast"), or
    - to a specific contour ("protected contour"), and/or
    - to specific points ("protected points")

This minimum elevation will apply to limited ranges of azimuth about the points to be protected.
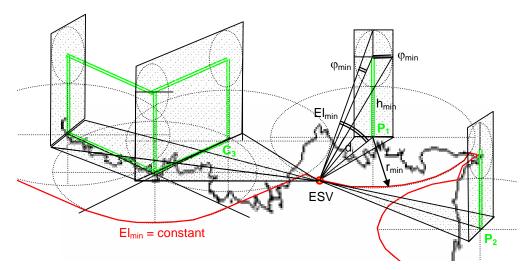
Figure 13: Example of variable minimum elevation

The implicit constant minimum elevation value shall be the value specified within the applicable EN: EN 302 340 for 14 GHz band ESVs and EN 301 447 for 4/6 GHz band ESVs.

The lowest permitted value (El_0) of the minimum elevation of the antenna main beam axis in any direction in azimuth shall be specified.

For an explicit constant minimum elevation the minimum elevation shall be El_0. For a variable minimum elevation, a minimum altitude (h_{min}) and a minimum off-axis angle (φ_{min}) shall be specified. In both cases the minimum elevation (El_{min}) in the direction of any point P_i to protect shall be:

$$(3): \quad El_{min} = \max\left(\text{Arctan}\left(\frac{\max\left(h_{min} - h_{ESV}, 0\right)}{d_i} \right) + \varphi_{min}, El_0 \right)$$

where:

- h_{ESV} is the height of the ESV antenna centre above the sea level, and

- d_i is the distance of the point P_i to be protected.

The minimum elevation (El_{min}) shall apply within a range of azimuths $\left(Az\left(P_i\right) - \alpha_{min}, Az\left(P_i\right) + \alpha_{min}\right)$ of any point P_i to protect, of azimuth $Az\left(P_i\right)$, and with:

$$(4): \quad \alpha_{min} = \text{Arctan}\left(\frac{\tan\left(\varphi_{min}\right)}{\cos\left(El_{min}\right)} \right)$$

For the computation of the arc-tangent function value, its parameters (h_{min}, h_{ESV}, and d_{min}) shall be converted to a common unit (e.g. m, km or NM).

The minimum altitude (h_{min}) may include any necessary margin (e.g. the amplitude of the tide). For the computation of the minimum elevation, ESV network operators shall not take account the height of the tide.

Note: In the case where the minimum elevation (El_{min}) is computed with the minimum distance (d_{min}) to all the points to protect, the minimum elevation (El_{min}) applies to any azimuth of the antenna main beam axis along the contour encompassing of the circles of radius r_{min} around the points to protect. It may also apply outside that contour.

$$(5): \quad r_{\min} = \left(\frac{\max\left(h_{\min} - h_{ESV}, 0\right)}{\tan\left(El_{\min} - \varphi_{\min}\right)} \right)$$

In case of a variable limit a parameter shall be used to indicate to which contour the minimum distance of the ESV has to be determined. This contour shall be the same contour for the EIRP and the EIRP density limitations.

In case of a variable minimum elevation a parameter shall be used to indicate to which contour and/or points the minimum distance of the ESV has to be determined. The same contour and/or list of points for the EIRP and the EIRP density limitations shall apply for the minimum elevation limitation.

The parameters for the minimum elevation within a zone shall be the following:

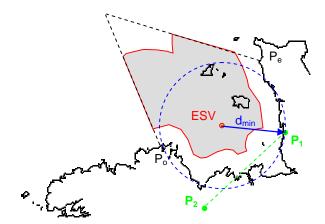| Parameter	Value
Minimum altitude:	$h_{\min}$ [m]
Minimum off-axis angle:	$\varphi_{\min}$ [°]

Contour number for minimum elevation	0 when $h_{\min} < 0$
	
	0 when the country coast is used and
	        when $h_{\min} >= 0$
	
	$\neq 0$ when a "protected contour" and/or "protected points" are used and
	        when $h_{\min} >= 0$

"protected contour" list of points	longitude and latitude of each point
"protected points" list of points	longitude and latitude of each point

Figure 14: Example of variable minimum elevation relative to 2 points of a radio link

6   DATA FILES

6.1   Data file types

The concerned Administration shall provide three types of files:

1. one or several explanatory documents ("note file"),

2. a file with the list of sectors along the coast of its country and within its country ("list of sectors file") ,

3. for each sector a single file ("sector file") with the set of zone contours and transmission parameters.

The "note files" shall be text files (with name extension ".txt"), Rich Text files (with name extension either ".doc" or ".rtf", Word files (with name extension ".doc") or a PDF-file (Portable Document Format) (with name extension ".pdf").

The "list of sectors file" and the "sector files" shall be text files (.txt).

6.2   Data file naming

The file names (<file name>) shall have the following structure:

<file name>:=   <country code>+"_"+<file type>+" "
                     +[<sector number>]+" "+[<sector name>]+" "+<sequential number>+" "
                     +[<date of applicability>] +(".txt" | ".doc")

where:

<country code>	is the ITU country code (e.g. F for France)
<file type>	is the type of file (e.g. Note)
<sequential number>	file sequential number e.g. for successive versions of a "sector file" or for different "note files"
<sector number>	sector number along the coast. This number could be the distance of a specific point of the sector from an arbitrary origin on the coast (e.g. 850 for a sector around Brest, starting at 850 km from the origin of the Atlantic coast on the border with Spain)
<sector name>	name of the sector or of the main town of the sector (e.g. Brest)
<date of applicability>	Date of the day of applicability of the information contained within the file.

6.3   Explanatory documents ("note files")

The concerned Administration shall describe within a "note file" the implemented numbering plan of the sectors.

Any "note file" may contain free text and if appropriate a link to the Administration's website. The information to be submitted by Administrations to The Office under Annex B should be placed within these "note files". In particular "note files" may mention whether it is possible or not to coordinate and authorize additional use on a case-by-case basis within zones where transmissions are prohibited, e.g. to facilitate commissioning or maintenance in ports

6.4   Data file management

The concerned Administration shall upload the files on the part of The Office website dedicated to ESVs for its country and shall remove outdated files from that server when necessary.

At any time there shall be:

- the "note files" in force, at least one,

- the "sector files" which currently apply,

- the "sector files" which may yet be applied during transition periods,

- the "sector files" which will have to be applied at the end of the transition periods

- the current "list of sectors file" referring to all these sector files.

Each "sector file" shall have a date of publication and a date of entry into force.

The date of entry into force of any "sector files" shall not be earlier than 90 days after the date of its publication on The Office website for files relating to Annexes A and B, but could be earlier (i.e. for "immediate" application) for safety-critical changes. Any "sector files" shall be implemented within any ESV network not later than the date of entry into force and not earlier than 90 days before the date of entry into force. During that 90 days transition period either the present or the future "sector file" may apply.

6.5 List of sectors files and sector files

6.5.1 General structure

Each list of sectors files and sector files shall consist of blocks of data. Each block shall consist of a header containing the block of data name between square brackets (e.g. "[Format]") followed by a series of statements, one per line. Each line shall end with a carriage return (RC) and a line feed (LF). Each statement shall start with the name of the parameter followed by "=" and shall continue with the values of the associated parameters (e.g. longitude and latitude) separated by semi-colons (";"). Each statement shall be limited to 128 characters including the ending carriage return (RC) and the line feed (LF). Upper case characters and lower case characters may be used with no distinction except within strings of characters such as names, addresses, etc.

Each file may end with an optional control block with a check-sum used to detect errors on the data it contains.

When read for implementation within an ESV network the following rules shall apply:

- space characters shall be ignored except for parameters values which are character strings,
- empty lines shall be ignored,
- absent parameter values shall be replaced by the specified default values, otherwise an error message shall be generated,
- in case of a non valid parameter value an error message shall be generated,
- in case of a non valid check-sum an error message shall be generated,
- unexpected parameters shall be ignored, and if possible a warning message shall be generated,
- in case of an unexpected statement an error message shall be generated,
- in case of an error detected in the parameters of a sector, no transmission shall be authorized within that sector,
- in case of an error detected in the parameters of a zone, no transmission shall be authorized within that zone,

The error messages and the warning messages shall identify the errors and their locations within the file and shall be transmitted to the concerned Administration.

6.5.2 Decimal numbers

Decimal numbers shall be given with a comma or a point between the unit digit and the first decimal digit.

6.5.3 Dates

The date (<date>) shall be represented using the following format:

<date> := <day>"/"<month>"/"<year>

where:

- <day> is the day number in the month over 2 digits,
- <month> is the month number over 2 digits,
- <year> is the year number over 2 or 4 digits.

6.5.4 Check-sum

The check-sum (check_sum) of the content of the file is the cyclic control sum of the 8 bits codes of all the characters contained within the file, excluding the return carriage (RC), line feeds(LF) and the check-sum statement but including the empty lines or statements. The check-sum value shall be computed as specified in ITU-T Recommendation X.25 for the computation of the FCS (Frame Check Sequence). The bits of weights 2^0 to 2^7 of the nth character code shall be the coefficients of the elements $X^{8.(N-n)+0}$ to $X^{8.(N-n)+7}$ of the polynomial representing the file data of N character codes. The value of the check-sum shall be encoded in hexadecimal over 4 characters.

6.6 List of sectors file

Any list of sectors file shall consist of the following and successive blocks of data.

6.6.1 File format block

Statements	Formats
Header	[Format]
File type	Type = <file_type>
Version	Version = <version_number>

where:

- <file_type> is the type of file. Its value shall always be "ESV_contour_list",

- <version_number> is the type of format version. Its value shall be "v_01_00" until the present annex is revised and the format of this file is modified.

6.6.2 Administration and contact point block

Statements	Formats
Header	[Administration]
Country	country = <country_name>
Administration name	name = <administration_name>
Administration address	address = <administration_address>
Contact name	contact = <contact_name>
Contact telephone number	telephone = <telephone_number>
Contact e-mail address	e_mail = <e_mail_address>

where <country_name>, <administration_name>, <administration_address>, <contact_name>, <telephone_number>, <e_mail_address> are character strings.

6.6.3 Sector file list block

Statements	Formats
Header	[Sector_file_list]
Version	Version = <sector_file_list_version>
Date	Date = <date>
Notes	note = <note_file_name>
Sector file list	
For each sector {	
Sector file name	Sector = <sector_file_name>
Date of publication	pub_date = <pub_date>
Date of entry into force	from_date = <from_date>
}	

where:

- <sector_file_list_version > is the sequential number of the sector file list,

- <date> is the date of publication of the sector file list,

- <note_file_name> is a character string (e.g. "Note 23 3 11 02 2005.doc"). The default value is "".

- <sector_file_name> is the name of the applicable sector file (e.g. "F_A_940 Mont Saint-Michel 25 12 11 2004.txt").

- <pub_date> is the date of publication of the file, i.e. the date of notification of the file to The Office,

- <from_date> is the date of entry into force of the limitations specified within the file,

<sector_file_name> may appears twice with different dates of entry into force.

The following statements are optional:

Optional statements
Notes

6.6.4   Control block

This control block is optional.

Statements	Formats
Header	[CRC]
Check sum	CRC = <check_sum>

where:

- <check_sum> is the check-sum of the content of the file.

6.7   Sector files

Any sector file shall consist of the following and successive blocks of data.

6.7.1   File format block

Statements	Formats
Header	[Format]
File type	type = <file_type>
Version	version = <version_number>

where:

- <file_type> is the type of file. Its value shall always be "ESV_contour",

- <version_number> is the type of format version. Its value shall be "v_01_00" until the present annex is revised and the format of this file is modified.

6.7.2   Sector parameters' block

Statements	Formats
Header	[Sector]
Country name	country = <country_name>
Sector name	name = <sector_name>
Sector reference	reference = <sector_reference>
Sector contour number	contour = <contour_number>
Units	units = <distance_unit>;<angle_unit>
Date of publication	pub_date = <pub_date>
Date of entry into force	from_date = <from_date>
Notes	note = <note_file_name>

where:

- <country_name> is a character string (e.g. "France"),

- <sector_name> is a character string (e.g. "Lannion"),

- <sector_reference> is a character string (e.g. "F_A_900"),

- <contour_number> is the number of the contour of the sector (e.g. 1),

- <distance_unit> is the unit used for distances. It is a 2 characters string either "km" or "NM",

- <angle_unit> is the unit used for longitudes and latitudes only. It is a 2 characters string either "dg" for degree (°) or "gr" for grade,

- <pub_date> is the date of publication of the file, i.e. the date of notification of the file to The Office,

- <from_date> is the date of entry into force of the limitations specified within the file,

- <note_file_name> is a character string (e.g. "Note 23 3 11 02 2005.doc"). The default value is "".

The following statements are optional:

Optional statements
Notes

 Where there is no applicable sector file , no transmission shall be authorized.

The date of entry into force shall not be earlier than the date of publication plus 90 days.

6.7.3   *Zone parameters blocks*

Statements	**Formats**
For each zone {	
Header	[Zone]
Zone name	name = <zone_name>
Frequency band	band = <f_min>; <f_max>
Contour type	type = <contour_type>; <zone_level>; <Tx_on>
If <contour_type> =1 then {	
Minimum distance from the coast	d_min = <d_min>
Maximum distance from the coast	d_max = <d_max>
}	
else if <contour_type> =2 then {	
Minimum distance from the coast	d_min = <d_min>
Maximum distance from the coast	d_max = <d_max>
Zone contour number	zcn = <zone_contour_number>
}	
else if <contour_type> =3 then {	
Zone contour number	zcn = <zone_contour_number>
}	
else if <contour_type> =4 then {	
Zone reference	zone_ref = <zone_ reference>
}	
Minimum ESV antenna diameter	diameter = <min_diameter>
Minimum antenna elevation (main beam altitude)	El_min = <El_0>; <min_altitude>; <Phi_min>
Maximum ESV e.i.r.p. towards the horizon	eirp = <eirp_0>; <alpha>
Maximum ESV e.i.r.p. spectral density toward the horizon	eirp_density = <eirpd_0>; <beta>
If (<alpha> ≠ 0) or (<beta> ≠ 0) or (<min_altitude> >=0) then {	
Protected contour number	pcn = <protected_contour_number>
Protected point list number	ppn = <protected_points_list_number>
}	
Maximum off-axis e.i.r.p. density limit reduction	eirp_reduction = <reduction>
Maximum ESV e.i.r.p. per vessel [dBW]	eirp_max = <eirp_max>
Note	note = <note_file_name>
}	

where:

- <zone_name> is the zone name. It is a character string (e.g. " Ln_01" for Lannion #1),

- <f_min> and <f_max> are the lower and upper frequencies [MHz] of the frequency band,

- <contour_type> is the contour type either 1, 2, 3 or 4 as defined within the "Topology" clause,

- <zone_level> is the zone priority level. It is a positive integer number,

- <Tx_on> shall be "ON" for zones where transmissions are permitted, "OFF" for zones where no transmission is permitted. For "OFF" zones where transmission are subject to special permissions to obtain from local authorities a "Note" statement should give the "note file" name where more details are given,

- <d_min> is the minimum distance [km or NM] from the coast when no zone contour is specified,

- <d_max> is the maximum distance [km or NM] from the coast when no zone contour is specified,

- <zone_contour_number> is the number of the list of points of the zone contour. The value 0 corresponds to no contour specified. The default value 0.

- <zone_ reference> is the zone reference. It is a character string (e.g. "berths 12-16" or "within 100 m of habour bridge"),

- <min_diameter> is the minimum antenna diameter [m]. For 14 GHz band ESVs the default value shall be 0,6 m. For 4/6 GHz band ESVs the default value shall be 2,4 m,

- <eirp_0> [dBW] and <alpha> [dB] are the coefficients of the e.i.r.p limit. For 14 GHz band ESVs the default values shall be 16,3 dBW for <eirp_0> and 0 dB for <alpha>. For 4/6 GHz band ESVs the default values shall be 20,8 dBW for <eirp_0> and 0 dB for <beta>,

- <eirpd_0> [dB(W/MHz)] and <beta> [dB/km or dB /NM] are the coefficients of the e.i.r.p density limit.
  For 14 GHz band ESVs the default values shall be 12,5 dB(W/MHz) for <eirpd_0> and 0 dB/km or 0 dB/NM for <beta>.
  For 4/6 GHz band ESVs the default values shall be 17 dB(W/MHz) for <eirpd_0> and 0 dB/km or 0 dB/NM for <beta>,

- <El_0> is the lowest permitted value of the minimum elevation of the antenna main beam axis in any direction in azimuth.

- <min_altitude> is the minimum altitude of the antenna main beam axis at the protected points of the specified protected contour and protected points. The default value shall be any negative altitude.

- <Phi_min> is the minimum off-axis angle (alias φ_{min}) from the antenna main beam axis of any point to protect of the specified protected contour and protected points. The default value shall be the minimum elevation value specified within the applicable EN: EN 302 340 for 14 GHz band ESVs and EN 301 447 for 4/6 GHz band ESVs.

- <protected_contour_number> is the number of the list of points of the protected contour used for elevation, EIRP and EIRP density limitations. The value 0 corresponds to no contour specified. The default value shall be 0.

- <protected_points_list_number> is the number of the list of points (as a for contour) of the protected points used for elevation, EIRP and EIRP density limitations. The value 0 corresponds to no contour specified. The default value shall be 0.

- <reduction> is the maximum off-axis e.i.r.p. density limit reduction [dB] relative to the limit mask defined in RR Res. 902. The default value is 0 dB,

- <eirp_max> is the maximum e.i.r.p. of the vessel,

- <note_file_name> is a character string (e.g. "Note 23 3 11 02 2005.doc"). The default value is "".

The following statements are optional:

Optional statements
Minimum distance from the coast
Maximum distance from the coast
Minimum ESV antenna diameter
Maximum ESV e.i.r.p. towards the horizon
Maximum ESV e.i.r.p. spectral density toward the horizon
Maximum off-axis e.i.r.p. density limit reduction
Protected contour number
Protected point list number
Minimum antenna elevation
Note

6.7.4   Contour blocks

Statements	**Formats**
For each contour {	
Header	[Contour]
Contour number	contour = <contour_number>
For each point {	
Point coordinates	P<number> = <longitude>; <latitude>
}	
}	

where:

- <contour_number> is the number of the list of points of the contour,

- <number> is the sequential number of the point within the list. The number of the first point shall be 1.

- <longitude> is the longitude of the point,

- <latitude> is the latitude of the point.

6.7.5   Control block

This control block is optional.

Statements	**Formats**
Header	[CRC]
Check sum	CRC = <check_sum>

where:

<check_sum> is the check-sum of the content of the file.

ANNEX 1

EXAMPLE OF A CONTOUR AT 12 NAUTICAL MILES AROUND A COUNTRY COAST

The following example is hypothetical and it should not be presumed that such a contour will be issued.
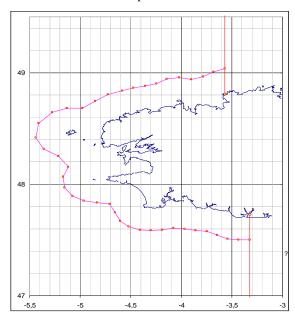

Figure 15: Example of contour at 12 nautical miles around a country coast

The following example shows the types of files which will have to be uploaded on the Office website corresponding to the above contour:

Types of files

1) one or several explanatory documents (**"note file"**)
2) a file with the list of sectors along the coast of its country and within its country ("**list of sectors file**")
3) for each sector a single file ("**sector file**") with the set of zone contours and transmission parameters.

List of files on The Office website

```
Note_1_03_11_02_2005.doc
Note_2_02_11_02_2005.doc
F_14GHz_ESVs_01_11_01_05.txt


F_Brest_01_12NM_11_01_05.txt
```

The "List of sectors file" will have the following structure:

Statements	**List of sectors file**
File format block	
Header	`[Format]`
File type	`Type = ESV_contour_list`
Version	`Version = v_01_00`
Administration and contact point block	
Header	`[Administration]`
Country	`country = France`
Administration name	`name = `*`<TBD>`*
Administration address	`address = `*`<TBD>`*
Contact name	`contact = `*`<TBD>`*
Contact telephone number	`telephone = `*`<TBD>`*
Contact e-mail address	`e_mail = `*`<TBD>`*
Sector file list block	
Header	`[Sector_file_list]`
Version	`Version = 1`
Date	`Date = 11/01/2005`
Notes	`note = Note_1_03_11_02_2005.doc`
Sector file list	
For each sector	
{	
Sector file name	`Sector = F_Brest_01_12NM_11_01_05.txt`
Date of publication	`pub_date = 11/01/2005`
Date of entry into force	`from_date = 12/04/2005`
}	
Control block (optional)	
Header	`[CRC]`
Check sum	`CRC = 8A7C`

The "sector files" will have the following structure:

Statements	Sector file
File format block	
Header	`[Format]`
File type	`type = ESV_contour`
Version	`version = v_01_00`
Sector parameters' block	
Header	`[Sector]`
Country name	`country = France`
Sector name	`name = Brest`
Sector reference	`reference = A_850_12NM`
Sector contour number	`contour = 1`
Units (<distance_unit>;<angle_unit>)	`units = NM; dg`
Date of publication	`pub_date = 11/01/2005`
Date of entry into force	`from_date = 12/04/2005`
Notes	`note = Note_2_02_11_02_2005.doc`
Zone parameters blocks	
For each zone	
{	
Header	`[Zone]`
Zone name	`name = Brest at 12 NM`
Frequency band (<f_min>; <f_max>) [MHz]	`band = 14000; 14250`
Contour type (<contour_type>; <zone_level>; <Tx_on>)	`type = 3; 1; ON`
Zone contour number	`zcn = 1`
Minimum ESV antenna diameter [m]	`diameter = 0.6`
Minimum antenna elevation (<El_0> [dg]; <min_altitude> [m]; <Phi_min> [dg])	`El_min = 7; -1; 7`
Maximum ESV e.i.r.p. towards the horizon (eirp = 16,3 + 0*log(d)) dBW	`eirp = 16.3; 0`
Maximum ESV e.i.r.p. spectral density toward the horizon (eirp_density = 12,5 + 0*log(d) dB(W/MHz))	`eirp_density = 12.5; 0`
Maximum off-axis e.i.r.p. density limit reduction [dB]	`eirp_reduction = 3`
Maximum ESV e.i.r.p. per vessel [dBW]	`eirp_max = 56`
Note	`note = Note_2_02_11_02_2005.doc`
}	
Contour blocks	
For each contour	
{	
Header	`[Contour]`
Contour number	`contour = 1`
For each point	
{	
Point coordinates (<longitude>[°]; <latitude>[°])	`P1 = -3,319889; 47,50068`
	`P2 = -3,43208; 47,501129`
	`...`
	`P39 = -3,67945; 49,00801`
	`P40 = -3,56691; 49,03667`
}	
}	
Control block (optional)	
Header	`[CRC]`
Check sum	`CRC = 3EAC`

Note: The values of the check sums within these example were not computed and are quite certainly not valid.