

## **DRAFT EUROPEAN COMMON PROPOSALS**

### **PART 26**

#### **Agenda Item 1.26 – Earth stations on-board vessels**

##### **Introduction**

Agenda item 1.26 requests to consider regulatory and technical provisions to enable earth-stations located on board vessels (ESV) to operate in fixed-satellite service (FSS) networks in the 6 and 14 GHz bands.

The ESV operation bears a great potential of interference to the fixed service applications in these bands and could constrain the FS development in the associated downlink bands if protection from the FS were to be requested.

Therefore, the use of ESVs in the uplink bands 5925 – 6425 MHz and 14 – 14.5 GHz can be allowed if it does not have the potential to cause harmful interference to the fixed service, and that ESV are not allowed to claim protection from the FS in the downlink 4 and 11 GHz bands. In particular, and since it is not used by the FS in Europe, the band 14.0-14.25 GHz is preferred for use by ESVs.

This can be ensured by introducing in the Radio Regulations, in an appropriate Resolution, mandatory technical and operational limitations including a “minimum distance” from the coast line (300 km in the 6 GHz band and 125 km in the 14 GHz band as agreed within ITU-R) beyond which in-motion ESVs will not cause unacceptable interference.

Europe proposes to suppress Resolution 82 and replace it with a new Resolution, attached to the existing FSS allocations in the 6 GHz and 14 GHz bands and a footnote limiting the use of ship earth stations in the 14 GHz band.

More specifically, Europe proposes the following:

1. To attach a footnote to the FSS allocations in the 5925-6425 MHz and 14-14.5 GHz to introduce Resolution [ESV] giving the operational and technical provisions under which ESVs will be able to operate.
2. To introduce a footnote allowing administrations, if they so wish, to waive the need for prior agreement from them when operating ESVs in the 14-14.5 GHz band or in sub-bands thereof.
3. To attach a footnote to the frequency band 14 – 14,5 GHz relating to the use of MMSS ship Earth stations
4. Suppress the Resolution 82 (WRC-2000)

**Proposals**

**ARTICLE 5**  
**Frequency allocations**

**MOD EUR/1.26/1**

**5 830-7 550 MHz**

Allocation to services		
Region 1	Region 2	Region 3
5 925-6 700	FIXED FIXED-SATELLITE (Earth-to-space) ADD 5.ESV MOBILE 5.149 5.440 5.458	

*Reason: To apply footnote 5.ESV in the band 5 925-6 425 MHz.*

**MOD EUR/1.26/2**

**11.7-14.25 GHz**

Allocation to services		
Region 1	Region 2	Region 3
14-14.25	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite ADD 5.ESV2 Space research 5.505	

*Reason: To apply footnotes 5.ESV, 5.ESV2 and 5.ESV3 in the band 14.00-14.25 GHz.*

**MOD EUR/1.26/3**

**14.25-15.63 GHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>14.25-14.3</b>	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite ADD 5.ESV2 Space research 5.505 5.508 5.509	
<b>14.3-14.4</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite ADD 5.ESV2 Radionavigation-satellite	<b>14.3-14.4</b> FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite ADD 5.ESV2 Radionavigation-satellite	<b>14.3-14.4</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile- satellite ADD 5.ESV2 Radionavigation-satellite
<b>14.47-14.5</b>	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 ADD 5.ESV <u>ADD 5.ESV3</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite ADD 5.ESV2 Radio astronomy 5.149	

*Reason: To apply footnotes 5.ESV, 5.ESV2 and 5.ESV3 in the band 14.25-14.50 GHz.*

**ADD EUR/1.26/4**

**5.ESV** In the bands 5925-6425 MHz and 14-14.5 GHz, earth stations in fixed-satellite service networks may be operated on board vessels. Such use shall be in accordance with Resolution **[ESV]** (WRC-2003).

*Reason: To permit the use of ESVs in the bands 5925-6425 MHz and 14-14.5 GHz and to impose the provisions of Resolution **[ESV]** (WRC-2003).*

**ADD EUR/1.26/5**

**5.ESV2** In the band 14-14.5 GHz, ship Earth stations with an e.i.r.p. greater than 21 dBW shall operate in accordance with Resolution **[ESV]**.

**Reason:** *The footnote ensures that earth stations within the maritime mobile satellite service with similar characteristics to ESVs cannot avoid meeting the obligations of Resolution [ESV].*

**ADD EUR/1.26/5 bis**

**5.ESV3** Earth stations in fixed-satellite service networks on board vessels may operate in the frequency band 14.00 – 14.50 GHz without the need for prior agreement from Greece, [...], within the minimum distance given in Resolution [ESV] (WRC-03).

*Reason : Enable Administrations to license the operation of ESVs without the need of prior agreement, if they consider that such an agreement would not be necessary.*

**SUP EUR/1.26/6**

RESOLUTION 82 (WRC-2000)

**Provisions relating to earth stations located on board vessels  
which operate in fixed-satellite service networks  
in the bands 3700-4200 MHz and 5 925-6 425 MHz**

**Reason:** *Proposing necessary modifications with revision marks to Resolution 82 would be confusing. It is rather preferred to propose a new resolution as in EUR/1.26/7.*

**ADD EUR/1.26/7**

RESOLUTION [ESV] (WRC-2003)

**Provisions relating to earth stations located on board vessels  
which operate in fixed-satellite service networks in the uplink  
bands 5 925-6 425 MHz and 14-14.5 GHz**

The World Radiocommunication Conference (Geneva, 2003),

*considering*

- a) that there is a demand for global wideband satellite communication services on vessels;
- b) that the technology exists that enables earth stations on board vessels (ESVs) to use fixed-satellite service (FSS) networks operating in the uplink bands 5 925-6 425 MHz and 14-14.5 GHz;
- c) that ESVs have the potential to cause unacceptable interference to other services in the bands 5 925-6 425 MHz and 14-14.5 GHz;

- d) that with respect to the bands considered in this Resolution global coverage is only available in the band 5 925-6 425 MHz and that only a limited number of geostationary FSS systems can provide such global coverage;
- e) that without special regulatory provisions, ESVs could place a heavy coordination burden on some administrations, especially those in developing countries;
- f) that in order to ensure the protection and future growth of other services, ESVs shall operate with requisite technical and operational constraints;
- g) that, based on agreed technical assumptions, minimum distances from the coast have been calculated, within ITU-R studies, beyond which an ESV will not have the potential to cause unacceptable interference to other services in the bands 5 925-6 425 MHz and 14-14.5 GHz,
- h) that, in order to limit the interference into other networks in the Fixed-satellite service, it is necessary to establish maximum off-axis eirp density limits on ESV emissions,
- i) that establishing a minimum antenna diameter for ESVs may have an impact on the number of ESVs that will ultimately be deployed, hence may reduce the aggregate interference into the Fixed Service.

*noting*

that the regulatory procedures of Article 9 apply for ESVs operating at specified fixed points,

*resolves*

that ESVs transmitting in the 5 925-6 425 MHz and 14-14.5 GHz bands shall operate under the regulatory and operational provisions contained in Annex 1 and the technical constraints in Annex 2 of this Resolution,

*encourages concerned administrations*

to cooperate with administrations which license ESVs while seeking agreement under these provisions,

*instructs the Secretary-General*

to bring this Resolution to the attention of Secretary-General of the International Maritime Organisation (IMO).

## ANNEX 1 TO RESOLUTION [ESV]

### **Regulatory and operational provisions for ESV transmitting in the 5 925-6 425 MHz and 14-14.5 GHz bands**

1 The administration that issues the licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations follow the provisions of this annex and thus do not present any potential to cause unacceptable interference to the services of other concerned administrations.

2 ESVs service providers shall comply with the technical limitations listed in Annex 2 and, when operating within the minimum distances as identified in item 4 below, with the additional limitations agreed by the licensing and other concerned administrations.

3 In the associated downlink bands, 3 400-4 200 MHz and 10.7-12.75 GHz, ESVs in motion shall not claim protection from transmissions of terrestrial services operating in accordance with the Radio Regulations.

4 The minimum distances from the coast-line beyond which ESVs can operate without the prior agreement of any administration are 300 km in the 5 925-6 425 MHz band and 125 km in the 14-14.5 GHz band. Any transmissions from ESVs within the minimum distances shall be with the prior agreement of the concerned administration(s).

5 The potentially concerned administrations referred to in the previous item 4 are those where fixed or mobile services are allocated in the Table of Frequency Allocations of the Radio Regulations:

Frequency bands	Potentially concerned Administrations
5 925-6 425 MHz	All three Regions
14-14.25 GHz	Countries listed in No. <b>5.505</b> , except those listed in No. 5.ESV3
14.25-14.3 GHz	Countries listed in Nos. <b>5.505</b> , <b>5.508</b> and <b>5.509</b> , except those listed in No. 5.ESV3
14.3-14.4 GHz	Regions 1 and 3, except those listed in No. 5.ESV3
14.4-14.5 GHz	All three Regions, except those listed in No. 5.ESV3

6 Administrations, in applying the minimum distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where terrestrial services in the bands 5 925-6 425 MHz and 14-14.5 GHz are neither operating nor planned.

7 The ESV system shall include means of identification and mechanisms to terminate transmissions, on a mandatory basis, whenever the station operates outside its authorized geographic (see item 4 above) or operational limits.

8 Termination of transmissions as referred to in item 7 above shall be implemented in such a way that the corresponding mechanisms can not be by-passed on board the vessel, except under the provisions of No **4.9**;

9 ESVs shall be equipped so as to enable the licensing administration under the provisions of Article **18** to verify earth station performance and to terminate ESV transmissions immediately upon request by an administration whose services may be affected.

10 When ESVs operating beyond the territorial waters but within the minimum distance (as referred to in item 4 above) fail to comply with the terms required by the concerned administration pursuant to items 2 and 4, then that administration may:

- request the ESV to comply with such terms or cease operation immediately; or
- request the licensing administration to require such compliance or immediate cessation of the operation.

ANNEX 2 TO RESOLUTION [ESV]

**Technical limitations applicable to ESVs transmitting in the bands  
5 925-6 425 MHz and 14-14.5 GHz**

	<b>5 925-6 425 MHz</b>	<b>14-14.5 GHz</b>
Minimum diameter of ESV antenna	1.2 m	0.6 m
Maximum occupied bandwidth per vessel	2.4 MHz	2.4 MHz
Tracking accuracy of ESV antenna	± 0.2° peak	± 0.2° peak
Maximum ESV e.i.r.p. spectral density toward the horizon	17 dB(W/MHz)	12.5 dB(W/MHz)
Maximum off-axis eirp density	As per Rec. ITU-R S. 524-7	As per Rec. ITU-R S. 728-1