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It is a draft and does not reflect any agreed ICAO views or official positions.

PROPOSED AMENDMENT TO

ANNEX 10

AERONAUTICAL TELECOMMUNICATIONS

VOLUME V –

AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

1. The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

a)	~~Text to be deleted is shown with a line through it~~.	text to be deleted
b)	New text to be inserted is highlighted with grey shading.	new text to be inserted
c)	~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

2. The source of the proposed amendment is the Frequency Spectrum Management Panel (FSMP).

INITIAL PROPOSAL 1

CHAPTER 1. DEFINITIONS

…

~~***Space-based VHF System***. A non-geostationary satellite system that supports voice and/or data communications under aeronautical mobile-satellite (R) service in the frequency band 117.975 – 137 MHz.~~

…

CHAPTER 4. UTILIZATION OF FREQUENCIES ABOVE 30 MHz

…

4.1.3.1 *Emergency channel*

4.1.3.1.1 The emergency channel (121.500 MHz) shall be used only for genuine emergency purposes, as broadly outlined in the following:

…

Note 2.— The ITU Radio Regulations (RR 5.200) permit the use of the aeronautical emergency frequency 121.500 MHz by mobile stations of the maritime mobile service under the conditions laid down in Article 31 of the Radio Regulations for distress and safety purposes with stations of the aeronautical mobile service and the aeronautical mobile-satellite service.

…

4.1.3.3 Common signalling channels for VDL

…

~~[~~

~~4.1.3.3.3 For VDLM2 operations, AM(R)S and AMS(R)S operations will not be assigned co-frequency in the same DOC.~~

~~OR~~

~~4.1.3.3.3 Co-channel assignment of the VDL Mode 2 Common signalling channel (CSC) within the same designated operational coverage (DOC) area shall be made by agreement between the administrations concerned, taking into account operational and technical considerations.~~ ~~be subject to agreement between the administration and the service providers concerned.~~

4.1.3.3.3 When making co-channel assignment between AM(R)S and AMS(R)S operations on VDL Mode 2 Common signalling channel (CSC) within the same designated operational coverage (DOC) area, it shall be subject to agreement between the administrations concerned, taking into account operational and technical considerations.

Note.— Guidance material on~~relating to~~ the agreement ~~procedures~~ for VDL Mode 2 CSC co-

channel operations, and participating entities, is contained in the Manual on Space-Based VHF (Doc ~~xxx~~10228).

~~]~~

…

4.1.3.4.2 The auxiliary search and rescue channel (123.100 MHz) shall be available only with the characteristics as contained in Annex 10, Volume III, Part II, Chapter 2 (25 kHz).

Note.— The ITU Radio Regulations (RR 5.200) permit the use of the aeronautical auxiliary frequency 123.100 MHz by mobile stations of the maritime mobile service under the conditions laid down in Article 31 of the Radio Regulations for distress and safety purposes with stations of the aeronautical mobile service and the aeronautical mobile-satellite service.

…

4.1.4 Provisions concerning the deployment of VHF frequencies and the avoidance of harmful interference

…

4.1.4.2 For areas where frequency assignment congestion is severe or is anticipated to become severe, the geographical separation between facilities operating on the same frequency shall, except where there is an operational requirement for the use of common frequencies for groups of facilities, be such that the protected service volume of one facility is separated from the protected service volume of another facility by a distance not less than that required to provide a desired to undesired signal ratio of 14 dB or by a separation distance not less than the sum of the distances to the associated radio horizon of each service volume, whichever is smaller. This provision shall be implemented on the basis of a regional air navigation agreement.

…

Note 5.— The criteria contained in 4.1.4.1 and 4.1.4.2 are applicable in establishing minimum geographical separation between VHF facilities, with the object of avoiding co-channel air-to-air interference. Guidance material relating to the establishment of separation distances, or maximum interference level, between ground stations, between space stations, between ground and space stations, ~~and~~ between aircraft and ground stations, and between aircraft and space stations for co-channel operations is contained in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation including statement of approved ICAO policies *(Doc 9718).*

…

4.1.4.10 The communication coverage provided by a VHF ground or a Space-based VHF transmitter shall, in order to avoid harmful interference to other stations, be kept to the minimum consistent with the operational requirement for the function.

~~[~~4.1.4.11 Aeronautical mobile-satellite (R) services shall not cause harmful interference to adjacent AM(R)S channels when accounting for doppler shift.~~operate their occupied bandwidth within their assigned channel and not cause harmful interference to adjacent channels.]~~

…

4.1.4.12 Assignment of Space-based VHF channels shall:

a) be made on the basis of regional agreements;

b) take into account the operational deployment of stations operating in the AM(R)S to avoid interference; and

c) ~~[be able to be reassigned]~~ allow for their potential reassignment to accommodate changes in the AM(R)S.

Note. - Guidance material on the process for identification of Space-based VHF frequencies for assignment, which includes inter-regional coordination, can be found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (ICAO Doc. 9718).

…

4.1.6 Plan of assignable VHF radio frequencies for use in the international aeronautical mobile service

Introduction

This plan designates the list of frequencies available for assignment, together with provision for the use by the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service of all frequencies with a channel spacing of 25 kHz, and for the use by the aeronautical mobile (R) service of all frequencies with a channel width and spacing of 8.33 kHz.

…

4.1.6.1 The frequencies in the frequency band 117.975 – 137.000 MHz for use in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service shall be selected from the lists in 4.1.6.1.1.

…

4.1.6.2 The frequencies that may be allotted for use in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service in a particular region shall be limited to the number determined as being necessary for operational needs in the region.

~~*Note . — The number of frequencies required in a particular region is normally determined by the Council on the recommendations of Regional Air Navigation Meetings.*~~

Note.— The number of frequencies required in a particular region or area is determined by the regional coordination process that is found in the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (ICAO Doc. 9718).

…

Origin	Rationale
FSMP-WG	Space-based VHF will increase communication performance and coverage for aircraft operating in areas not serviced by ground-based VHF infrastructure. This improvement is achieved without requiring the addition or modification to equipment onboard aircraft, resulting in benefits being available to the industry in a relatively short period. ~~The definition for a Space-based VHF System in Chapter 1 ensures consistent terminology across the volumes of Annex 10. The same definition is included in Annex 10 Volume V.~~ To ensure safe operation of Space-based VHF services that coexist with other services, additions of new provisions to Chapter 4 specifically relevant to Space-based VHF are being proposed, which describes minimum spectrum consideration of the Space based VHF, including: - Providing protection to existing VHF Data Link services by requiring that the Service Providers are consulted with before assigning channels for Space-based VHF (4.1.3.3.3)

	- Requiring that the new Space-based VHF services do not cause harmful interference to adjacent AM(R)S channels (4.1.4.11). - To avoid interference between States or between regions, the provision 4.1.4.12~~3.5~~ defines the principle of the identification of Space-based VHF frequencies through regional agreement (including inter-regional agreements), considering the need to protect the AM(R)S terrestrial VHF services. - Consistent with terrestrial VHF allotment, 4.1.6.2 requires that Space-based VHF frequencies be limited to the number determined as being necessary for operational needs in the region. ~~- Maintaining compliance with assigned channel widths through provision 4.1.4.11 aims to prevent harmful interference to terrestrial stations operating on adjacent frequencies.~~ ~~- The modification of 4.1.4.10 describes the key principle of Space-based VHF operation. The coverage provided by space-based VHF will be kept minimum and only the necessary number of operational frequencies will be assigned to Space-based VHF within a given region or area, in order Space-based VHF service to safely coexist with other services with the same frequency bands.~~ Furthermore, adding a reference to the aeronautical mobile-satellite (R) service is proposed in provisions 4.1.6.1 and in multiple notes in Chapter 4. ~~2.2, 4.1.3.1.1, 4.1.3.4.2, 4.1.6 and 4.1.6.1.~~