International Civil Aviation Organization

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ICAO EUR Region

8.33 KHZ REGIONAL IMPLEMENTATION PLAN

Second Edition – December 2024

December 2024

Prepared by the ICAO European and North Atlantic Office
on behalf of the European Aviation System Planning Group (EASPG)

This Plan was developed by the ICAO European and North Atlantic Office

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RECORD OF AMENDMENTS

As of 6 December 2024, the EASPG 8.33 KHz Regional Implementation Plan
1st Edition, December 2020 is approved. EASPG Decision 2/11 refers
2nd Edition, December 2024 is approved EASPG Decision 6/9 refers

1. SCOPE OF THE PLAN

Executive summary

1.1 VHF air-ground communications plays a critical role in ensuring a safe and efficient air traffic control system in the ICAO EUR Region. However, it has become increasingly difficult to make new VHF frequency assignments to satisfy the increasing requirements for VHF voice channels, which are stemming from the growing number of flights and new services.

1.2 To satisfy the demand for new frequency assignments in the aeronautical mobile route service band 117.975-137 MHz (VHF band) and resolve the medium to long term frequency congestion problem leading to delays in airspace improvements, a coordinated deployment of air-ground voice communications based on 8.33 kHz channel spacing is ongoing in the ICAO EUR Region. The implementation of 8.33 kHz channel spacing above and below FL195 was subject to an EAPNG decision (EANPG48/28-29 refers). Additionally, based on the Commission Implementing Regulation (EU) No 1079/2012 (VCS Regulation) the implementation extends the applicability area of 8.33 kHz channel spacing communications to the airspace below FL195 of Switzerland, Norway and EU Member States. Commission Implementing Regulation (EU) No 1079/2012 has been repealed and requirements have been included in the Commission Implementing Regulation (EU) 2023/1770 for imposing obligations to operators to equip aircraft with required avionics to use EU airspace, as well as in the Regulation (EU) 2017/373 (via the amendment introduced by Reg (EU) 2023/1771) for the obligations on MS and ANSPs concerning 8.33 kHz.

1.3 Whilst it was recommended that the aircraft equipment requirements should be harmonized across the implementation airspace, temporary derogations from 8.33 KHz carriage requirements have been granted by the implementing states depending on local characteristics. This, together with the fact that not all European States are implementing 8.33 kHz channel spacing communications in the airspace below FL195, could contribute to the development of potentially safety hazardous situations.

1.4 When assessing the probability of satisfying the forecasted frequency assignment demand at the European level, taking into account States' local measures granting exemptions from converting several frequency assignments to 8.33 kHz channel spacing, it can be observed that an area of future congestion is developing in the Eastern part of Europe. This is also due to the expected increase in 25 kHz frequency assignments demand from states not included in the 8.33 kHz deployment area

Spectrum issues

1.5 Previous assessment in the European airspace made by EUROCONTROL [1] already indicated that congestion in the VHF COM and NAV bands would persist and was particularly acute in the areas with the highest density of flights in the EUR Region. It is projected that more than 50%

[1] EASPG FMG/25 Final Report refers

of the VHF COM frequency requirements will not be satisfied in the high traffic density parts of the EUR Region in the coming years.

1.6 Reviewing the progress of various ongoing activities aimed at alleviating the current and future forecasted frequency spectrum congestion in regard to the VHF COM band, it was demonstrated that only the full implementation of 8.33 KHz VHF COM channel spacing would permit to meet all VHF COM frequency demand in the EUR Region until at least 2025.

Plan Review

1.7 As an iterative process, the Plan requires regular updating to keep current with changes in ICAO Annexes and guidance material, new technology, political considerations, and lessons learned from actual ATC air-ground voice communications service. Plan updates should also focus on the VHF 8.33 kHz channel spacing in the ICAO EUR Region being an important component of an integrated regional and global air navigation system. It is intended that EASPG and its contributory bodies conduct a complete review where the period should be determined by the European Aviation System Planning Group (EASPG). The review should be guided by a consultative process involving States and relevant International Organisations such as the ICAO and EUROCONTROL.

1.8 In that respect, this plan should be updated periodically to ensure the best possible view of future requirements and available spectrum resources to satisfy them. It is strongly recommended a more detailed study of the future need for frequency assignments within the EUR Region.

2. OBJECTIVES

Introduction

2.1 In order to reduce the potential spectrum frequency congestion foreseen at the end of 2025 in the South-Eastern part of EUR, the ICAO EUR/NAT Secretariat, through the ICAO Air Navigation Services Implementation Support Group (ANSISG) and Frequency Management Group (FMG) meetings, were tasked to develop a 8.33 KHz Regional Implementation Plan to be presented to the first meeting of the EASPG Programme Coordination Group.

2.2 Furthermore, to support the continued demand for additional voice channels and avoid frequency congestion in the ICAO EUR Region, several ICAO decisions and European Union (EU) legislation have led to the implementation of 8.33 kHz (instead of 25 kHz) channel spacing between assigned frequencies.

2.3 Frequency congestion demands more efficient solutions to make better use of the available VHF band (e.g. better frequency re-use) but also more efforts to ensure aircraft equipage and ground ATS system implementation of 8.33 kHz capable radios.

Plan objective

2.4 The Plan is designed to address the timeline for the 8.33 KHz Implementation Plan in the EUR Region, by investigating, initially, within the countries targeted their current status (e.g. infrastructure capabilities, traffic equipage, etc.) and as a result of this assessment, a set of planned dates was developed to support the implementation activities (as presented in the Table 1).

2.5 A specific attention should be drawn to the exemptions possibilities since these would need to be consolidated throughout the implementation area and made in synchronized way with the neighbors. It is important to note that, when fewer exemptions are granted, the better are the chances of implementation without issues.

3. IMPLEMENTATION PROCEDURES

3.1 In order to achieve a successful 8.33 kHz channel spacing implementation, some specific procedures should be, initially, considered so that a full deployment of 8.33 KHz spacing may be implemented, alleviating, to the extent possible, the impact for the users.

3.2 With the aim to clear define the implementation process, an *Implementation Plan* is proposed through the Table 1 - Tentative Plan – 8.33 KHz Regional Implementation. As part of a development process, this Table describes 5 (five) ***Deliverables*** that should be provided by States (or ANSPs) to support the work during the deployment process until the full implementation of 8.33 kHz channels.

3.3 The *Implementation Plan* set out the scope of work needed to implement 8.33 kHz in the Eastern part of the ICAO EUR Region, in order to realise frequency planning benefits from 2025 onwards. The Implementation Plan identifies milestones to complete 25 to 8.33 kHz conversions until 2026.

3.4 In addition, the *Implementation Plan* contains two scenarios reflecting the proximity (and the range) from the States that already implemented 8.33 to avoid further impact and discontinuity of services. Some States will be part of the ***Phase of Implementation 1*** (*from 2021 to 2025*). The ***Phase of Implementation 2*** (*from 2022 to 2026*) – see ***Table 1*** – is characterized by the States inside a "green area", corresponding the geographical distribution of frequency congestion having, at that moment, an optimal number of available frequencies.

3.5 The following aspects should be assessed:

Safety Case

3.6 On the operational level, before implementing 8.33 kHz channel spacing communications, it is required that a local safety case (***Deliverable D1*** refers) has been performed (by the State or ANSP) identifying all potential hazards and associated mitigation means and safety requirements in order to ensure that the change will not affect the existing level of safety.

3.7 Concerning the airdrome operations, a local safety case should perform identifying all potential hazards and associated mitigation means and safety requirements in order to ensure that the change will not affect the existing level of safety.

Aircraft equipage

3.8 On the subject of on-board avionics, all flights subject to an air traffic service should be properly equipped (***Deliverable D2*** refers), verify if exemption procedures are in place, and also contingency and fall back procedures should be established for communications in case of interferences.

3.9 In terms of aircraft retrofit, as 8.33 KHz capability may come as an option on some new aircraft, early advance notice to minimize retrofit cost would be beneficial to the airspace users of EUR Region. Significant cost for older generation aircraft retrofit would be required in particular for those GA aircraft. To avoid unnecessary retrofit requests, coordination with IATA is highly recommended.

Ground Equipment

3.10 Regarding the technical level, the ANSPs will have to ensure, before converting the assigned 25k Hz frequency to an 8.33 kHz channel that the radio equipment on the ground designated to be used for 8.33 kHz channel spacing communications is properly installed and certified (***Deliverable D3*** refers). Furthermore, ANSPs should ensure the coverage in such a way that all traffic subject to the air traffic service provided are able to maintain communications in the concerned area of responsibility and perform tests to ensure that there are no technical issues (e.g. interferences, etc.).

Flight Data Processing System

3.11 The inclusion of all equipment and capability information in the flight plan (FPL and/or RPL) is mandatory for IFR operated flights within the ICAO EUR Region.

3.12 The aircraft operator shall ensure that the information provided in the flight plan (i.e. 8.33 kHz equipage information or the presence of the exemption indicator) is consistent with the aircraft to be used and airspace with applicability of GAT 8.33 kHz requirement (***Deliverable D4*** refers). The FDPS should be able to provide real-time flight information (8.33 kHz equipage information) to the air traffic controllers and enable automated co-ordination between adjacent air traffic control centres.

Frequency management and conversion

3.13 The frequency band 117.975 - 137 MHz is allocated solely for aeronautical radio communication. ICAO EUR Doc 011 sets out planning rules that are designed to ensure that each system element is adequately protected from interference from other compliant aeronautical radio services. These rules are based on the assumption that all systems and equipment are compliant with current standards.

3.14 An 8.33 kHz conversion is, by definition[2], the replacement of a frequency assignment registered in the central register and using 25 kHz channel spacing by a frequency assignment using 8.33 kHz channel spacing (***Deliverable D5*** refers). The channel spacing for 8.33 KHz channel assignments is defined as 25 KHz divided by 3 which is 8.333… KHz (*ICAO Annex 10, Vol V*).

3.15 When performing a conversion, if the new 8.33 channel is the centre frequency of the former 25 kHz assignment, and there are no changes in the Designated Operational Coverage (DOC), international coordination is not required. However, if the new 8.33 channel chosen for conversion is not the former 25 kHz central frequency or there is a change in the DOC then international coordination is required to ensure that the new submitted assignment can be used without interfering with existing assignments. A conversion is completed when the old frequency in 25 kHz spacing is deleted and the new 8.33 channel is in Assigned or Operational status.

[2] EU Regulation No 1079/2012 (VCS Regulation)

4. IMPLEMENTATION PLAN

Tasks and responsibilities of all stakeholders

5.1 It is recommended that the States (or ANSPs) comply with the proposed *Implementation Plan* that defines essentially what steps to be taken and when (*Target date*) they should be completed before the full implementation of 8.33 kHz channels as defined in ***Deliverable D6***.

5.2 As a reference, the *8.33 KHz Voice Channel Spacing (VCS) Implementation Handbook*, Edition 2.0, 06/12/2018, issued by EUROCONTROL, provides, in a single document, recommendations regarding institutional provisions, flight planning, operational procedures, aircraft retrofit, safety, frequency management and State's management aspects for the deployment of 8.33kHz channel spacing communications.

5.3 In that respect, the following table (*next page*) presents the tasks (deliverables) to be performed, phases of implementation and due dates for each designated State that are required to implement 8.33 kHz channels:

Tentative Plan – 8.33 KHz Regional Implementation

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	Albania	Above FL195	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025
	Algeria (?)	*Nil*	2 or 3 (?)						
	~~Andorra~~	*Nil*							
	Armenia	*Nil*	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025
	Azerbaijan	*Nil*	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	Belarus	*Nil*	Not yet planned	No safety case performed	No requirements in force for aircraft operating below FL195 in Belarus airspace Aircraft flying out of Belarus need to be equipped according to the requirements	No operational need (ground radio systems have 8.33 capability but currently they operate in 25 kHz mode)	exist	Not developed due to the absence of operational necessity	Not yet planned
	Bosnia and Herzegovina	*Above* FL195	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025
	Cyprus	*Nil*	1	June 2024	Dec 2024	Dec 2019	Nov 2020	Sept 2024	Dec 2024

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	Georgia	*Nil*	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025
	Israel	Not going to be implemented	Not going to be implemented	Not required (not implemented)	Not required for domestic For aircraft flying out of Israel they need to be equipped according to the requirements	Not required	Exist	Not required	Not required
	Kazakhstan	*Nil*	3	Dec 2029	Dec 2030	Dec 2030	Exist	Dec 2030	Dec 2031

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	~~Monaco~~								
	Morocco	*Nil*	Not going to be implemented	Not required (not implemented)	No Requirements in force for aircraft operating below FL195 in the airspace of RM to be properly equipped 8,33	Not required	Exist	Not required	Not required
	Montenegro	*Above* FL195	1	2024	Done	Done	Done	Dec 2025	Dec 2025
	North Macedonia	Above FL195	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	Republic of Moldova	In Progress	2	Jan 2025	Jan 2026	Exist	Exist	Jan 2026	Dec 2026
	Russian Federation	*Nil*	1	Dec 2021	Dec 2023	Jul 2022	Jul 2023	Dec 2024	Dec 2025
	Serbia	Above FL195	1	2024	Done	Done	Done	Dec 2025	Dec 2025
	Tajikistan	*Nil*	2	Jul 2022	Jul 2024	Jan 2023	Jan 2024	Jul 2025	Jul 2026
	Tunisia (?)	*Nil*	2 or 3 (?)						
	Türkiye	Above FL195	1	Dec 2026	Dec 2026	exist	exist	Dec 2027	Dec 2029

#	State	Current status of 8.33 KHz	Phases of Implementation	Deliverables					
				D1	**D2**	**D3**	**D4**	**D5**	**D6**
				1) Local safety case to be performed (by the State or ANSP) *(Identify risks and mitigations at the level of the network)***;** **2) Evaluate the potential network impact assessment of future requirements for frequency assignments**	**All ACFT properly equipped 8.33** *<u>Exemptions</u>: Identify temporary derogations from airborne carriage obligations* *<u>Note</u>: Coordination with IATA is highly recommended*	**Radio equipment on the ground designated to be used for 8.33 kHz installed and certified**	**FDP able to process all equipment and capability information** (*compliant with 8.33 kHz requirements*) **in the flight plan**	**Conversion of existing 25 kHz channels to 8.33 kHz channels** (*Development of a national conversion plan*) *Note: It is recommended that conversions are initially operated for a trial period of a suitable duration*	**Full implementation of 8.33 kHz channels**
				Target date					
	Turkmenistan	*Nil*	2	Jul 2022	Jul 2024	Jan 2023	Jan 2024	Jul 2025	Jul 2026
	United Kingdom	All	5	Dec 2016	Dec 2018	Dec 2018	Dec 2017	Jan 2019	Dec 2025
	Ukraine	Nil	3	Dec 2029	Dec 2030	Dec 2030	Dec 2029	Dec 2030	Dec 2031
	Uzbekistan	*Nil*	2	Jul 2022	Jul 2024	Jan 2023	Jan 2024	Jul 2025	Jul 2026

Table 1 - Tentative Plan – 8.33 KHz Regional Implementation

- END -