

**Agenda Item 5:** Update on Frequency Finder**LATEST UPDATES TO FREQUENCY FINDER TOOL**

A program for managing, assessing compatibility and presenting frequency assignments for aeronautical communication and navigation systems as well as for the coordination of SSR Mode S Interrogator Identifier (II)/ Surveillance Identifier (SI) codes

(Presented by the Secretariat)

SUMMARY

This paper presents the latest work, enhancements and functionalities brought to the Frequency Finder tool to assist ICAO Regional Offices and States to manage and coordinate aeronautical frequency assignments and SSR Mode S II/SI codes.

Action by the meeting is in paragraph 4.

1. INTRODUCTION

1.1 ICAO has developed the program Frequency Finder that offers a tool to assist ICAO Regional Offices and States to manage and coordinate aeronautical frequency assignments. Further Frequency Finder provides also for the calculation of interference areas and a geographical interface for plotting of the frequency assignments, including any interference area.

1.2 This program combines the data base management functions for updating the ICAO COM lists 2 and 3 as well as the SSR list for SSR Mode S II/SI codes. The current test version of the SSR module in Frequency Finder is now capable of assessing compatibility with Mode S II codes and Mode S SI codes, which is now under final evaluation by ICAO team and will be released in due course. The SSR module is in accordance with the proposed modifications to the Aeronautical Surveillance Manual (DOC 992). The Surveillance Panel is expected to approve this material later in 2022.

1.3 Work on the development of a module for VHF/UHF navigation systems as in COM list 2 (ILS, VOR, DME and GBAS) has been completed using the frequency assignment planning criteria as per the Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (Doc. 9718); Volume II which was approved by the Secretary-General in 2021.

2. CURRENT WORK ON FREQUENCY FINDER

2.1 In order to better support States and ICAO regional offices, ICAO has successfully further enhanced and implemented the following features to Frequency Finder tool:

- 1) Plotting interference contours in the NAV module; and
- 2) a global database for Mode S II/SI code assignments.

2.2 Plotting interference areas in the VHF- Navigation systems (VHF-NAV)

2.2.1 With the plotting of interference contours on the google map, the difference between the NAV systems/facilities is now identifiable.

For the ILS or VOR/DME interference contours, the outline colors have been selected to match the coverage of the ILS or VOR systems with a blue line and similarly for the DME contour, a greenish outline was selected to match the colors of the DME coverage. A connector line has also been implemented that connects the stations that are tested and are not compatible.



2.3 Enhancement to the tool to facilitate Mode S II/SI code assignment planning

2.3.1 Frequency Finder included only a module for SSR Mode S Interrogator Identifier (II) **code** assignments that was introduced about ten years ago. This module implemented only the planning criteria for SSR Mode S II codes, which are in line with the planning criteria for Mode S II codes as is currently in the Aeronautical Surveillance Manual (Doc. 9924).

2.3.2 Recently, the need has been identified in the APAC Region to introduce SSR Mode S **Surveillance Identifier (SI) code**. Relevant change proposals to Doc. 9924, which were generated from within the APAC Region are currently being reviewed within the Surveillance Panel. This Change proposals to Doc 9924 will be reflected in the SSR module in Frequency Finder to include the option to assess the compatibility of both Mode S II and SI codes, including cases, where not all Mode S interrogators or transponders are capable to use Mode S SI codes. This is in particular relevant in cases, where the transition towards full implementation of SI codes is in progress. The updated software in Frequency Finder is currently being tested by ICAO Head Quarters and the ICAO APAC Regional Office.

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2.4 It is foreseen that the modified versions of Frequency Finder will be distributed to the Regional Offices during the second or third quarter of 2022. These versions include a module for VHF-COM and NAV frequency assignments as well as a module, which is to be distributed separately, only for SSR Mode S II/SI code assignments. In addition, taking into account comments/requests from States and Regional Officers, new runtime versions of Frequency Finder, where the modules for frequency assignments and for SSR Mode S II/SI codes will also be separated and distributed to States.

3. UPDATES ON THE ONLINE COURSE DEVELOPMENT RELATED TO FREQUENCY MANAGEMENT FOR CIVIL AVIATION

3.1 The Fundamentals of Frequency Management Online Programme is in continuous development and will be composed of three new self-study online courses. The intent is to offer these courses as independent courses or combined, however, remaining a prerequisite to the participation at the regional workshops

3.2 These courses will provide an overview of frequency spectrum used for aeronautical services as well as offer a familiarization with the regulations. Furthermore, the material covering frequency assignment planning criteria for aeronautical radio communication systems will be covered, which includes introduction of ICAO Frequency Finder tool.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) make extensive usage of the Frequency finder tool for frequency coordination ;
- c) discuss any relevant matter as appropriate; and
- d) provide feedback on FF tool usage, suggestions, bugs and recommendations

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