

International Civil Aviation Organization



ICAO

**THE FOURTH MEETING OF MODE S DOWNLINKED
AIRCRAFT PARAMETERS WORKING GROUP
(MODE S DAPs WG/4)**

Video Teleconference, 29 – 31 March 2021

Agenda Item 3: Sharing of State's implementation on Mode S and related issues, including the experience in Mode S Interrogator Identifier (II) Code usage in APAC region

**IMPROVEMENT ON THE COORDINATION OF SSR MODE S II AND
SI CODES IN THE APAC REGION**

(Presented by the Secretariat)

SUMMARY

This paper presents information about the ICAO tool to support Mode S Interrogator Identifier (II) codes and Surveillance Identifier (SI) codes coordination in APAC region.

1. INTRODUCTION

1.1 In 2008/2009 APANPIRG/19 and APANPRIG 20 reviewed the methodology and principles for the coordination of SSR Mode S II codes. These principles are summarized in the APANPIRG Conclusions:

- Conclusion 19/40 on the Coordination for SSR Mode S Interrogator Identifier Code
- Conclusion 20/56 on the coordination for SSR Mode S II Codes
- Conclusion 20/57 on the planning criteria for SSR Mode S II Code Assignment.

Note 1: These conclusions are reproduced in Flimsy/01 to this meeting, together with proposals to update these in particular with the view to introduce SSR Mode S SI code planning in the APAC Region.

Note 2: The planning criteria as approved by APANPRIG 20 served as a template for updating the SSR Aeronautical Surveillance Manual (Doc 9924) with the view to make these planning criteria globally applicable.

1.2 In the same timeframe (2008/2009) ICAO introduced in its program Frequency Finder a module that allows users (States and Regional Offices) to manage the (Regional) database for SSR Mode S II code assignments and coordinate with the relevant Regional Office.

1.3 The SSR module has been introduced during workshops in the AFI, APAC, MID, CAR and SAM Regions and is to date in use by the APAC, AFI, CAR and SAM Office. The organization of the methodology used in Frequency Finder allows for Regions to match their user requirements to the needs specific for each Region as per Concussions from Regional Planning an Implementation Groups.

1.3.1 These workshops were primarily intended to introduce frequency assignment planning material in Frequency Finder for the frequency assignment planning of VHF COM systems in the band

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117.975 – 137 MHz and VHF/UHF NAV systems in the bands 108 – 117.975 MHz (ILS-Localizer, VOR and GBAS/VDB, 328.6 – 335.4 MHz (ILS Glide Path) and 960 – 1215 MHz (DME and TACAN). Participation in these workshops was mainly in the area of expertise in frequency assignment planning.

1.4 Frequency Finder is intended to be used solely by the ICAO Regional Offices and (or on behalf of) the States that are accredited to the relevant Regional Office.

2. DISCUSSIONUse of the SSR Mode S II code module in Frequency Finder

2.1 Frequency Finder presents, in the SSR Mode S module, the Global database of SSR Mode S II code assignments that have been coordinated with the relevant Regional Office. Through this database, the Regional Office can coordinate Mode S II code assignments to secure that the same II code is not used at different facilities with an overlapping Designated Operational Coverage.

Note: For each compatibility calculation in FF, a buffer zone of 10 NM is included in the calculations

2.2 In order to assess the compatibility of SSR Mode S II code assignments, various parameters are necessary as is proposed in paragraph 2.2.3 of Flimsy/01.

2.3 Of particular importance to the international coordination that ICAO can perform are cases where II/SI code assignments are for SSR facilities that have a coverage that overlaps with the territory of neighboring countries. The same applies to the inter-regional coordination of SSR Mode S II code assignments.

Short description of the SSR Mode II code module

2.4 Next to the normal data base functions such a query the Mode S II code list, exporting data, synchronizing the local data base with the global database on the ICAO server etc., Frequency Finder offers the functions:

- Add a new II code
- Modify and existing II code
- Test the compatibility of a new or modified II code with other II code assignment.
- Search for compatible II codes.

2.5 II codes can be entered in the Mode S II code list for Mode S facilities with a circular coverage. Alternatively, sectorized (or Key-hole) coverage can be entered in 24 sectors, each with an operational range are required. Calculation of the compatibility is performed at the coverage of each sector with increment of 1 degree.

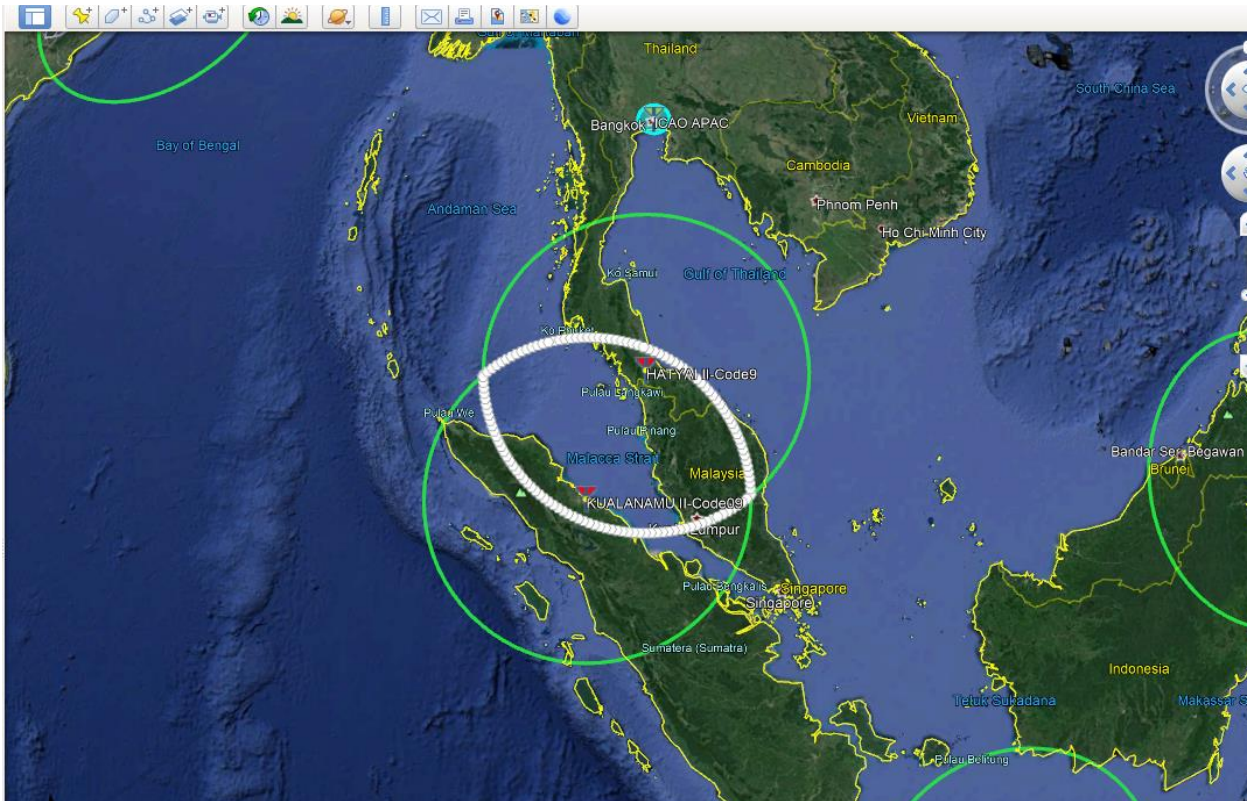
Future work

2.6 In the light of the reported shortage of II codes and taking into account the perceived high level of SSR Mode S SI capable transponders in aircraft, ICAO has started working on extending the coverage of the current SSR Mode S II code module to include SSR Mode S SI codes as well.

2.7 In addition, work is ongoing to improve the user friendliness of Frequency Finder.

Example

2.8 An example of the compatibility calculations is in the screenshot below. The area within the white points is the area where the two Mode S II code assignments are not compatible.



Note: in this example consideration can be given to introduce sectorized coverage of one or both SSR Mode S facilities to remove the incompatibility.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this papers these developments;
- b) be advised that current planning is to organize next year workshops on the use of Frequency Finder, Including the use of the Mode S IC module probably in all ICAO Regions; and
- c) discuss any relevant matters as appropriate.
