International Civil Aviation Organization

THE THIRD MEETING OF THE ASIA/PACIFIC GBAS/SBAS IMPLEMENTATION TASK FORCE (APAC GBAS/SBAS ITF/3)

(Video conference, 27-28 September 2021)

Agenda Item 4: Technical Updates related to GBAS/SBAS

VDB FREQUENCY ASSIGNMENT AND COORDINATION

(Presented by Hong Kong, China)

SUMMARY

It is planned to deploy ground based augmentation system (GBAS) at Hong Kong International Airport (HKIA) after completion of the GBAS trial. GBAS monitors the signals integrity of the Global Navigation Satellite Systems (GNSS) and broadcasts its differential correction information via Very High Frequency data broadcast (VDB) to provides precise navigational and approach services. Considering other GBAS, VHF Omni-directional Range (VOR) and Localiser (LOC) of Instrument Landing System (ILS) occupying the same frequency spectrum at the nearby airports, VDB frequency assignment and coordination is required for GBAS implementation.

Hong Kong, China shares its experience in securing the assignment of GBAS VDB frequency after coordination with ICAO APAC office.

1. INTRODUCTION

1.1 With reference to the ICAO Doc 9718, candidate frequency for desired GBAS VDB should have at least 1 MHz separation from those of existing VOR, ILS LOC and other GBAS VDB within 33 nautical miles. In an area with multiple airports with VORs and ILS scattering around, it is required to have a harmonized approach in coordinating the frequencies in order to meet the challenges in assigning frequencies for GBAS implementation.

1.2 Within 33 nautical miles from Hong Kong International Airport (HKIA), more than 20 sets of VOR and ILS were identified. It was challenging to assign a frequency for GBAS VDB at HKIA in the band of 108.025 MHz to 117.950 MHz while fulfilling the 1 MHz separation guideline.

1.3 After re-assignment of existing VOR frequency and coordination works with ICAO APAC office, a frequency for future GBAS VDB has been confirmed.

2. DISCUSSION

2.1 With the support from ICAO APAC office, the possibility of making an additional GBAS VDB frequency assignment was assessed, with the consideration of all nearby VOR and LOC. Initially, as shown in the Figure 1, no frequency in the band of 108.025 MHz to 117.950 MHz for GBAS deployment could be identified available.

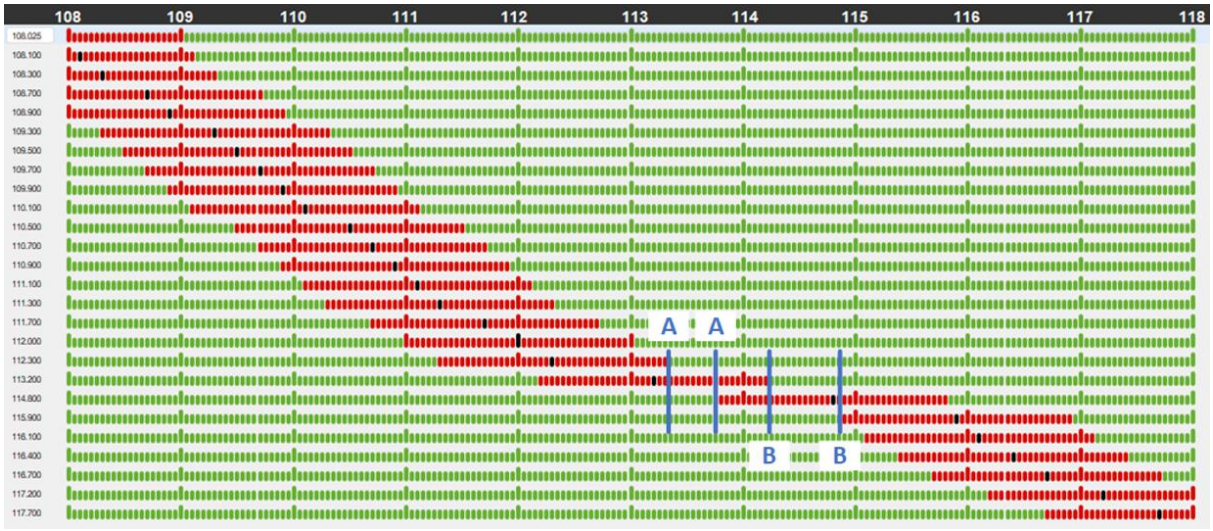

Figure 1 – Frequency assignments that are excluded from consideration for use by GBAS/VDB at Hong Kong International Airport

2.2 However, it was noted that some frequencies (those between lines A or between lines B as shown in Figure 1) would become available for potential frequency assignment for GBAS VDB after re-assignment of existing VOR frequencies. According to the results of further assessment, only one of these two VOR frequencies can be re-assigned after taking the forthcoming VOR replacement project into consideration.

2.3 The initial assessment results and the proposed frequency were given to the ICAO APAC office for assessment and coordination with neighboring States/Administrations. At the same time, application was also submitted to the Office of the Communication Authority which is the regulatory body for managing Hong Kong's radio frequency spectrum. Finally, through liaison among different parties via various forums, a viable frequency has been assigned for the planned GBAS deployment at HKIA.

2.4 It was noted that a regional guidance material on aeronautical frequency spectrum management for APAC States/Administrations is under development by ICAO Spectrum Review Working Group (SRWG) and the section on navigation equipment, including GBAS, would be drafted. It is expected that the document will be a good reference for VDB frequency assignment and coordination in APAC region.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the Hong Kong, China's experience in securing the assignment of GBAS VDB frequency with support from relevant forums and parties under ICAO APAC office; and

b) note the latest development of regional guidance material on aeronautical frequency spectrum management for APAC States/Administrations under development by ICAO Spectrum Review Working Group.

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