



International Civil Aviation Organization

SECOND MEETING OF SPECTRUM REVIEW WORKING GROUP (SRWG/2)

Bangkok, Thailand 12 – 14 May 2015

Agenda Item 5: Recommendations for improvement of VHF frequency planning

RECOMMENDATIONS FOR IMPROVEMENT OF VHF FREQUENCY PLANNING

(Presented by Airports Authority of India)

SUMMARY

This paper discusses various issues concerning VHF utilization in the present 25 kHz channel spacing environment and proposes that SRWG to discuss and review.

1.0 INTRODUCTION

1.1 Presently, SRWG is continuing with the process of discussions to review the VHF utilization plan with 25 kHz channel spacing in the frequency band 117.975-137.975 MHz.

1.3 The SRWG “Task-A1-9” desires that India shares its experiences in selection, planning and assignment of frequencies in this band.

1.4. This paper discusses on the relevant issues concerning present deployment plan and proposes SRWG to discuss and consider introduction of 8.33 kHz channel spacing in AsiaPac Region.

2.0 DISCUSSION

2.1 Block Allotment of frequencies in the frequency band 117.975-137.000 MHz

2.2 In India, there is a growing demand for frequencies in the sub-bands (Allotment table 4-1 Annex 10 Volume V) earmarked for National Aeronautical Mobile Services in the frequency band 117.975-137.000 MHz. Already, there are many allocations including classified assignments in these sub-bands for different services. National licensing authority has duly approved these assignments. Discontinuation of sub-bands will bring in administrative and technical constraints to deal with possible interference mitigation issues.

2.3 Accordingly, India strongly supports for the continuance of the following block allotment of frequencies to National Aeronautical Mobile Services to meet national allotment requirements:

- i. 122.000-123.050 MHz inclusive
- ii. 123.150-123.6917 MHz inclusive
- iii. 129.700-130.8917 MHz inclusive

2.4 India also supports for the continuance following frequency sub-bands:

- i. 121.550-122.9917 MHz for Aerodrome Surface Communications
- ii. 128.825-132.025 MHz for Aeronautical Operational Control.
- iii.

3.0. Pool allotment of frequencies

3.1 Presently, frequency assignments for various functions in the AsiaPac Region are made from separate pools of VHF channels provided in frequency list no.3 as per ASAI/PAC/3/RAN Meeting conclusion 11/4. This list remains as a frequency planning document, which contains selection criteria as well as VHF channels required for different functions.

3.2 Doc 9718 Volume II Table 2-9 provides minimum geographical co-frequency separation distances between the edges of designated operational coverage (DOC). This table now provides a remedy wherein channels from different pools can be considered for assignment. This may help to provide additional channels to cover the shortage to certain extent. In APAC region, there is a need to exercise caution, as existing assignments have not taken consideration of adjacent channel criteria as well as offset carrier effects.

3.3 The SRWG may also consider and review the continuance of the pool allocation wherein number of pools are merged and minimized significantly. For instance, in respect of ACC function two separate pools namely ACC-L and ACC-U can be maintained.

4.0 Coordination of frequencies with ICAO APAC Region:

4.1 In line with ASIA/PAC/3/RAN Meeting Conclusion 11/4, all new frequency assignments planned as per VHF utilization plan for AsiaPac Region are coordinated with ICAO Regional Office, which is promulgated in Frequency List No.3. This list remains as a frequency planning document and contains selection criteria as well as VHF channels required for different functions.

4.2 However, no coordination is made for frequencies planned in national aeronautical mobile services. Similarly, the use of emergency frequency 121.500 MHz and aeronautical auxiliary frequency 123.100 MHz is not coordinated.

5.0 The Adjacent Channel Selection Criteria:

5.1 The protection of air/ground communications from adjacent channel interference is in accordance with the provisions of 4.1.4.3 in Annex 10, Volume V. The requirement is based on the principle that Designated Operational Coverage (DOC) for each of the facilities operating on an adjacent channel separated by a distance sufficient to ensure operations free from interference.

5.2 This provision is further clarified in Doc 9718 (Volume II), which elucidates that the DOC for facilities operating on an adjacent frequency are to be separated by 10 NM for stations operating with the same channel spacing.

5.3 It may be mentioned that while coordinating new frequency assignments with the Secretariat, India took care to ensure that adjacent channel frequency was also excluded from any new assignment (treated at par with co-channel as precaution to avoid interference).

5.3 The ICAO European frequency management manual (ICAO EUR Doc 011) contains the planning criteria for the compatibility of adjacent channel frequency assignments (Annex-A, B & C refers). Eurocontrol is already working on to further validate and rationalize VHF adjacent channel frequency planning/assignment rules. The results of works are expected to be available in 2015/2016. This document will surely help SRWG to understand the issue better. SRWG needs to closely coordinate with Eurocontrol for better understanding and sharing of views.

6.0 Back-Up frequencies:

6.1 The use of back-up frequencies especially for TWR, APP and ACC functions requires moderation. Presently, there are no SARPs or guidelines for B/Up frequencies in ICAO Annex Volume V and Doc 9718.

6.2 During the course of web conferences and email discussions, the secretariat circulated excerpts from Eurocontrol document. Section 2.7 of Part 2: "COM2 Best Practices" throw some light on the issue. In the absence of credible guidelines, the irrational use of b/up frequencies is increasing which leads to artificial shortfall of frequencies.

6.3 The SRWG may deliberate to regulate the deployment of B/Up frequencies and recommend measures to develop relevant SARPs provisions to Annex 10 Volume V

7.0 Operational needs for VHF channels in India for the period 2015-2020:

7.1 The Secretariat, ICAO APAC region made an assessment of the future needs for VHF channels up to 2020. The requirement of India was forwarded to the secretariat, which was simulated in the new frequency finder tool.

7.2 As per the analysis, the Secretariat has predicted that India's requirement could be met by continuing with the current 25 kHz channel spacing in respect of TWR, APP, ACC & ATIS functions provided the existing procedures for frequency allocation are modified and approved.

7.3 It may be added that ATS authority in India are still projecting further requirements for TWR and APP functions. When the actual requirement is finalized, India will forward them for simulation. India is aware that the SRWG, as per "Task 2a" has to complete this exercise before 28 May 2015.

7.4 India is of the opinion that conservative approach used by secretariat during simulation may pose constraints while finalizing the actual needs. As the actual requirement of frequencies for different functions is expected to grow exponentially for the next 5 years in India, the continuance of 25 kHz channel spacing may not be able to solve the shortfall. In this scenario, India proposes that SRWG may simultaneously consider the implementation of 8.33 kHz channel spacing even if it is to be implemented in a limited way (as in EUR region) for states desirous of such implementation.

7.5 In order to make simulation exercise more workable in respect of India, the Secretariat may, if possible, provide the new frequency finder tool to India (at least one state to practically assess the operational needs). This will help SRWG to objectively arrive at proper recommendations.

8.0 ACTION BY THE MEETING

8.1 The meeting is invited to;

- a) take note the information contained in this paper
- b) discuss various issues brought out in this paper for suitable and necessary remedial action and possible recommendations; and
- c) Initiate action for implementation of 8.33 kHz channel spacing in the region as appropriately as possible.
