International Civil Aviation Organization

EIGHTH MEETING OF SPECTRUM REVIEW WORKING GROUP (SRWG/8)

Bangkok, Thailand, 05 – 07 March 2024

Agenda Item 3: Review Frequency planning requirements for the Asia/Pacific Region

3.1 VHF COM Frequency Allotment Plan for APAC

PROGRESS ON VHF COM FREQUENCY ALLOTMENT PLAN FOR APAC REGION

(Presented by China)

SUMMARY

This paper presents the latest actions taken on VHF COM Frequency Allotment Plan for APAC Region, including the statistical analyses of the actual usage of frequencies in the APAC Region, and suggested to simplify the APAC Frequency Allotment Plan by converging the various allotments of "sub services" to the main service, and propose the twelve frequencies which have not been allotted to any services, be allotted to ACC services.

1. INTRODUCTION

1.1 Annex 10, Volume V, Chapter 4 contains a general allotment of the frequency band 117.975–137 MHz, which is allocated by the ITU to the Aeronautical Mobile (R) Service. The main subdivisions of this band are the frequency bands allocated to both international and national services and frequency bands solely allocated to national services. Specific allotments to services are to be determined regionally.

1.2 For all ICAO Regions allotment plans have been developed. These allotment plans sub-divide the frequency band 117.975 – 137 MHz into sub bands that are to be used for certain aeronautical applications or services such as TWR, ACC, APP, VOLMET etc. These allotment plans are part of the ICAO Regional Air Navigation Plan.

1.3 Currently, the VHF COM frequency coordination and registration in APAC region is supported by ICAO tool Frequency Finder (FF). The tool is updated to implement the planning principle of Doc 9718 Volume II (Second Edition, 2022) as well as the VHF COM Frequency Allotment Plan for APAC which is provided in Doc 9718 Volume II as APP B-2.

1.4 Simulations of future spectrum requirements have shown that certain allotments in the current allotment plan are prone to becoming saturated while other allotments are under-utilized and can provide space for accommodating new requirements. In addition, some proposals by States/ Administrations were identified to fall into the Not Allotted part of the VHF COM Frequency Allotment Plan for APAC.

1.5 The Seventh Meeting of the Spectrum Review Working Group (SRWG/7) held in 2023 reconsidered VHF COM Frequency Allotment Plan for APAC Region. Subsequently the SRWG/7 agreed to form an ad hoc expert group with China as the rapporteur and Mr. Robert Witzen as advisor, to study the allotment plan, analyze the actual usage of allotment registered in FF, identify areas for improvement and to propose solutions (technical and administrative), explore the potential in reallocating sub-bands/pools, survey the use of TIBA.

1.6 The interim introduction of the progress on VHF COM Frequency Allotment Plan for APAC Region was presented to CNS SG/27 as IP/13, and further review and discussion are needed in this SRWG/8 Meeting.

2. DISCUSSION

2.1 On the basis of FF database, the Chinese team analyzed what services each frequency was used for and how many times it was reused in band 117.975–137 MHz until July 2023, as follows:

Utilization and
reuse times of cu

It was noticed that each frequency was being used by other services besides the service of the VHF COM Frequency Allotment Plan. In addition to emergency service, 121.5 MHz and 123.1MHz are also registered for TWR, APP, ACC services.

2.2 An internal Aeronautical Spectrum Seminar initiated from China was held in Chengdu, China, from July 4 to 12, 2023, and Mr. Robert Witzen was invited to participate. The seminar undertook a detailed review of the Frequency Allotment Plan for the APAC region, which concentrated on the following sub-bands.

- 122.000 – 123.675 MHz (bandwidth 1.675 MHz).

Although this frequency band is not allotted to any service, ICAO is undertaking the frequency coordination for this band. The ICAO COM list 3 includes 830 frequency assignments in this band for a large variety of ATC services.

It is suggested to further explore the utilization of this band. One option is to keep the band un-allotted to any service with the understanding that in this case the band can be used for any service, as required by States.

- 128.900 – 132.025 MHz (bandwidth 3.125 MHz).

This band is allotted to AOC in the APAC Region, and the number of frequency assignments for each frequency for AOC purposes was only 701. This number was compared with the number of frequency assignments in Europe which in a smaller frequency band (131.400 – 131.975 MHz) accommodates 2919 frequency assignments.

It is suggested that it may be used as a basis for further work on determining a reduction of the AOC band. This would allow for other services for which the current allocation frequency bands have sustained in some form of congestion.

- 136.000 – 137.000 MHz (bandwidth 1 MHz).

This band is allotted to VDL in the APAC Region. It was noted that the frequency band 136.000 – 137.000 MHz is only used for 24 frequency assignments of which 21 are for the VDL Mode 2 Common Signalling Channel 136.975 MHz.

It is suggested that it would be beneficial to support efficient frequency assignment planning to concentrate in this band frequency assignments for VDL.

2.3 It is suggested by the seminar to simplify the VHF COM Frequency Allotment Plan for APAC Region by converging the various allotments of "sub services" to the main service. E.g., allotments to APP-L, APP-I, APP-U would be replaced with an allotment to APP. It can be more flexibility when States/ Administrations coordinate/assign for a new or modified frequency. The revised VHF COM Frequency Allotment Plan in Table and in Chart for APAC Region is provided in **Appendix A** and the cleaned edition has been included in revised Frequency Guidance Material (Management Manual).

Note: This simplification would require modifications to Frequency Finder. ICAO HQ is expected to prepare this.

In addition, it was noted that the allotment of twelve (12) frequencies, belonging to International and National Aeronautical Mobile Services band, have not been included in any of Asia-Pacific conference outcomes. These 12 frequencies had been mentioned and proposed to be alloted to ACC services in SRWG/7, but no clear conclusion was approved.

2.4 With the contents of 2.3, it is invited to endorse the following Draft Conclusion to simplify the VHF COM Frequency Allotment Plan and to clarify function of these twelve frequencies for APAC Region in this SRWG/8 meeting.

<table>
<tr><td colspan="3">Draft Conclusion SRWG/8/X VHF COM Frequency Allotment Plan for APAC Region</td></tr>
<tr><td colspan="2">What: VHF COM Frequency Allotment Plan for APAC Region provided in Appendix A to this Paper be adopted.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: Per discussion from SRWG/8 for the Region to simplify the VHF COM Frequency Allotment Plan and to clarify function of the twelve frequencies for inclusion in the next edition of the Frequency Guidance Material (Management Manual).</td><td colspan="2">Follow-up: ☐Required from States</td></tr>
<tr><td>When: 7-Mar-24</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☐APAC States ☐ICAO APAC RO ☐ICAO HQ ☒Other: SRWG</td></tr>
</table>

2.5 The frequency band 117.975 – 137 MHz VHF band is also allocated by the ITU to the aeronautical mobile-satellite (R) service, AMS(R)S at WRC-23. The new allocation is required to be operated in accordance with international aeronautical standards. The RESOLUTION COM4/2 (WRC-23) was also approved inviting the International Civil Aviation Organization to take into account this Resolution in the course of developing SARPs for the AMS(R)S and planning the AM(R)S and AMS(R)S in the frequency band 117.975-137 MHz.

It is necessary to develop planning criteria and select channels for implementation of Space-Based VHF Communication System. FSMP has agreed to form a Correspondence Group (CG) initially called the Space-Based VHF CG, aiming at first defining its terms of reference for such work, the expected timeframe of the project and potential deliverables. The further work of the ad hoc expert group will also need to be synchronized with the studies of the Space-Based VHF CG and FSMP.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper and the **Appendix A**;

b) review and endorse the Draft Conclusion to simplify the VHF COM Frequency Allotment Plan, and to clarify function of these twelve frequencies for inclusion in the next edition of the Frequency Guidance Material (Management Manual);

c) encourage States/Administrations to join the ad-hoc expert group, provide further contributions on the VHF COM Frequency Allotment Plan, and raise their respective concerns over the frequency allotment; and

d) discuss any relevant matter as appropriate.

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APAC Frequency Allotment Plan

Function (revised)	**Function**	**Frequencies (MHz)**
TWR 118.000-118.875MHz 124.300-124.375MHz	TWR	118.000 118.025 118.050 118.075 118.100 118.125 118.150 118.175 118.200 118.225 118.250 118.275 118.300 118.325 118.350 118.375 118.400 118.425 118.450 118.475 118.500 118.525 118.550 118.575 118.600 118.625 118.650 118.675 118.700 118.725 118.750 118.775 118.800 118.825 118.850 118.875 124.300 124.325 124.350 124.375
AS 121.550-121.975MHz	AS	**121.550 121.575** 121.600 121.625 121.650 121.675 121.700 121.725 121.750 121.775 121.800 121.825 121.850 121.875 121.900 121.925 121.950 121.975
APP 119.000-119.275MHz 119.400-120.075MHz 120.200-120.475MHz	APP	119.500 119.525 119.550 119.575 119.600 119.625 119.650 119.675 119.800 119.825 119.850 119.875 119.900 119.925 119.950 119.975
120.600-120.675MHz 120.800-120.875MHz 121.000-121.450MHz 123.800-123.875MHz 124.000-124.075MHz 124.200-124.275MHz 124.400-124.475MHz 124.600-124.875MHz 125.000-125.275MHz 125.400-125.675MHz 125.800-125.875MHz 126.000-126.075MHz 126.300-126.375MHz 126.500-126.575MHz 127.700-127.775MHz 127.900-127.975MHz	APP-L, APP-I, Also used for APP Direction finding or APP Surveillance radar	119.100 119.125 119.150 119.175 119.200 119.225 119.250 119.275 119.400 119.425 119.450 119.475 119.700 119.725 119.750 119.775 120.000 120.025 120.050 120.075 120.200 120.225 120.250 120.275 120.400 120.425 120.450 120.475 120.600 120.625 120.650 120.675 120.800 120.825 120.850 120.875 121.000 121.025 121.050 121.075 121.100 121.125 121.150 121.175 121.200 121.225 121.250 121.275 121.400 **121.425 121.450** 123.800 123.825 123.850 123.875 124.000 124.025 124.050 124.075 124.700 124.725 124.750 124.775 125.100 125.125 125.150 125.175 125.500 125.525 125.550 125.575 126.500 126.525 126.550 126.575 127.700 127.725 127.750 127.775 127.900 127.925 127.950 127.975
	APP-U	120.300 120.325 120.350 120.375 121.300 121.325 121.350 121.375 124.200 124.225 124.250 124.275 124.400 124.425 124.450 124.475 124.600 124.625 124.650 124.675 124.800 124.825 124.850 124.875 125.000 125.025 125.050 125.075 125.200 125.225 125.250 125.275

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ACC 118.900-118.975MHz 119.300-119.375MHz 120.500-120.575MHz 120.700-120.775MHz 120.900-120.975MHz 123.700-123.775MHz 124.500-124.575MHz 125.300-125.375MHz 125.700-125.775MHz 125.900-125.975MHz 126.100-126.175MHz 127.500-127.575MHz 128.100-128.175MHz 128.300-128.375MHz 128.700-128.775MHz 132.050-134.575MHz 135.825-135.975MHz	ACC-L Also used for ACC-L Surveillance Radar	126.100 126.125 126.150 126.175 127.500 127.525 127.550 127.575 128.300 128.325 128.350 128.375 128.700 128.725 128.750 128.775
	ACC-U ACC-L	118.900 118.925 118.950 118.975 119.300 119.325 119.350 119.375 120.500 120.525 120.550 120.575 120.700 120.725 120.750 120.775 120.900 120.925 120.950 120.975 123.700 123.725 123.750 123.775 124.500 124.525 124.550 124.575 125.300 125.325 125.350 125.375 125.700 125.725 125.750 125.775 125.900 125.925 125.950 125.975 128.100 128.125 128.150 128.175 132.050 132.075 132.100 132.125 132.150 132.175 132.200 132.225 132.250 132.275 132.300 132.325 132.350 132.375 132.400 132.425 132.450 132.475 132.500 132.525 132.550 132.575 132.600 132.625 132.650 132.675 132.700 132.725 132.750 132.775 132.800 132.825 132.850 132.875 132.900 132.925 132.950 132.975 133.000 133.025 133.050 133.075 133.100 133.125 133.150 133.175 133.200 133.225 133.250 133.275 133.300 133.325 133.350 133.375 133.400 133.425 133.450 133.475 133.500 133.525 133.550 133.575 133.600 133.625 133.650 133.675 133.700 133.725 133.750 133.775 133.800 133.825 133.850 133.875 133.900 133.925 133.950 133.975 134.000 134.025 134.050 134.075 134.100 134.125 134.150 134.175 134.200 134.225 134.250 134.275 134.300 134.325 134.350 134.375 134.400 134.425 134.450 134.475 134.500 134.525 134.550 134.575 135.825 135.850 135.875 135.900 135.925 135.950 135.975
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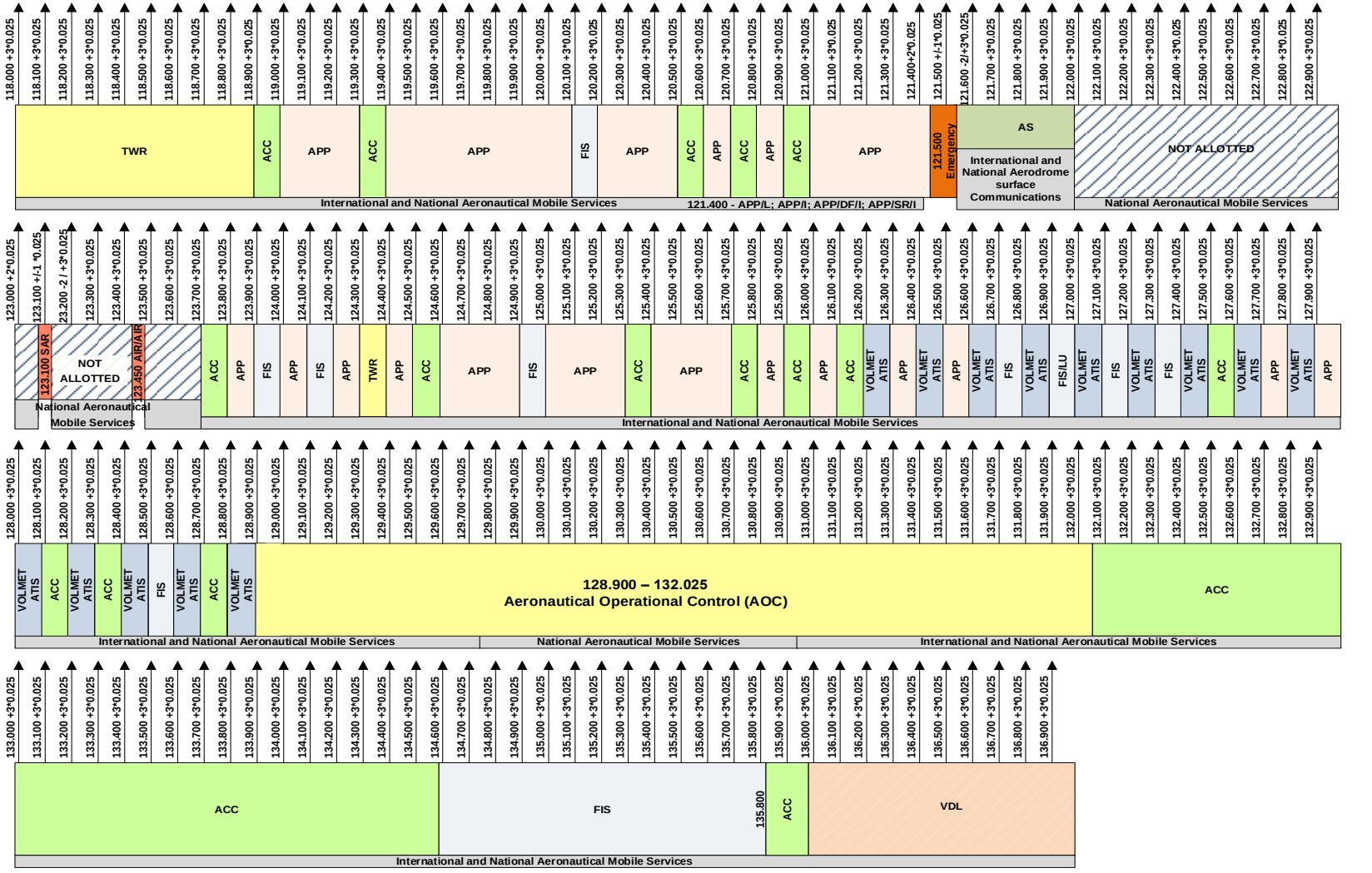
126.700-126.775MHz 126.900-126.975MHz 127.100-127.175MHz 127.300-127.375MHz 128.500-128.575MHz 134.600-135.800MHz		126.900 126.925 126.950 126.975 127.100 127.125 127.150 127.175 127.300 127.325 127.350 127.375 128.500 128.525 128.550 128.575
	FIS-U Also used for General purpose communications	134.600 134.625 134.650 134.675 134.700 134.725 134.750 134.775 134.800 134.825 134.850 134.875 134.900 134.925 134.950 134.975 135.000 135.025 135.050 135.075 135.100 135.125 135.150 135.175 135.200 135.225 135.250 135.275 135.300 135.325 135.350 135.375 135.400 135.425 135.450 135.475 135.500 135.525 135.550 135.575 135.600 135.625 135.650 135.675 135.700 135.725 135.750 135.775 135.800
VOLMET/ATIS 126.200-126.275MHz 126.400-126.475MHz 126.600-126.675MHz 126.800-126.875MHz 127.000-127.075MHz 127.200-127.275MHz 127.400-127.475MHz 127.600-127.675MHz 127.800-127.875MHz 128.000-128.075MHz 128.200-128.275MHz 128.400-128.475MHz 128.600-128.675MHz 128.800-128.875MHz	VOLMET/ATIS	126.200 126.225 126.250 126.275 126.400 126.425 126.450 126.475 126.600 126.625 126.650 126.675 126.800 126.825 126.850 126.875 127.000 127.025 127.050 127.075 127.200 127.225 127.250 127.275 127.400 127.425 127.450 127.475 127.600 127.625 127.650 127.675 127.800 127.825 127.850 127.875 128.000 128.025 128.050 128.075 128.200 128.225 128.250 128.275 128.400 128.425 128.450 128.475 128.600 128.625 128.650 128.675 128.800 128.825 128.850 128.875
AOC	AOC	128.900-132.025(Except 128.950MHz)
DATA LINK	DATA LINK	136.000-136.975
AIR-TO-AIR	AIR-TO-AIR	123.450 128.950 (TIBA)
NOT ALLOTED	NOT ALLOTED	122.000-123.675(Except 123.100MHz, 123.450MHz)

Note: The allotment of 12 yellow highlighted frequencies for ACC services has not been included in the Asia-Pacific conference outcomes.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APP
ACC
APP
ACC
APP
121.500 Emergency
AS
International and National Aerodrome surface Communications
NOT ALLOTTED
International and National Aeronautical Mobile Services
121.400 - APP/L; APP/I; APP/DF/I; APP/SR/I
National Aeronautical Mobile Services
123.000 +2*0.025
123.100 +/-1 *0.025
123.200 -2 / +3*0.025
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123.450 AIR/AIR
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National Aeronautical Mobile Services
International and National Aeronautical Mobile Services
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VOLMET ATIS
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VOLMET ATIS
FIS
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VOLMET ATIS
128.900 – 132.025
Aeronautical Operational Control (AOC)
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International and National Aeronautical Mobile Services
National Aeronautical Mobile Services
International and National Aeronautical Mobile Services
133.000 +3*0.025
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136.900 +3*0.025
ACC
FIS
135.800
ACC
VDL
International and National Aeronautical Mobile Services
LEGEND
TWR
Aerodrome Control Service
APP
Approach Control Service
May be used for APP/L, APP/I and APP/U
ACC
Area Control Service
May be used for ACC/L, ACC/I and ACC/U
FIS
Flight Information Service
May be used for FIS/L and FIS/U
VOLMET ATIS
VOLMET broadcasts
Automatic Terminal Information Service
AS
Aerodrome Surface (Surface Movement Control)
VDL
VHF Data Link
Special frequencies (not assignable)
International and National Aeronautical Mobile Services
Allotments as per Annex 10