



ICAO

International Civil Aviation Organization

SEVENTH MEETING OF SPECTRUM REVIEW WORKING GROUP (SRWG/7)

Bangkok, Thailand, 15 – 17 February 2023

Agenda Item 9: State and regional updates

THE UTILIZATION OF HF FREQUENCY SPECTRUM IN INDONESIA

(Presented by DGCA Indonesia)

SUMMARY

This paper discusses the challenges that are considered when utilizing the HF frequency spectrum for communication purposes in order to refer the Appendix 27 to the Radio Regulations.

1. INTRODUCTION

1.1 Indonesia, as a large country, utilizes HF frequency s for long-distance communications. This HF COM does not use the Frequency Finder as a platform for determining its allocation in the assignment process.

1.2 This paper discusses Indonesia's related action regarding the HF frequency spectrum assignments process for aeronautical operational purposes.

2. DISCUSSION

2.1 The process for allocating HF allocations was discovered to be quite different compared to other aeronautical frequency spectrums. When frequency assignment for VHF Com and Navigation (Frequency List II and III), requires the use of a Frequency Finder as an ICAO tool to coordinate with States prior to final publication by the ICAO Regional Office. However, the HF frequency spectrum allocations does not require coordination. In practice, we need to review related documents as a guide for assigning these bands.

2.2 Review ICAO Annexes and Document

2.2.1 According to the results of the ICAO Annex 10 Vol. V, the air-ground HF system that utilize frequency less than 30 MHz for international operations should be coordinated in accordance with Appendix 27 of the ITU Radio Regulations.

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2.2.2 We have been reviewing the ICAO Doc. 9718 Vol. I for further action in order to obtain more details regarding the utilization of HF band frequencies. The following are some critical HF points:

a. Appendix 27 to the Radio Regulations contains the frequency allotment plan for the AM(R)S in the HF bands between 2 850 kHz and 22 000 kHz. This appendix contains the plan for HF frequency allotments to major world air route areas and to regional and domestic air route areas as well as VOLMET areas. It also includes worldwide frequency allotments, which are for the use of aircraft operating agencies for Aeronautical Operating Control (AOC), to be assigned in accordance with RR 27/217.

b. Additionally, it is stated that only the ITU is used for frequency coordination and registration of frequency assignments in the HF bands (between 2 850 kHz and 22 000 kHz). However, ICAO is considering developing, in parallel, a relevant ICAO list of HF frequency assignments.

2.3 Review ITU Document

2.3.1 To obtain further information in planning the allocation of HF frequencies, we conducted a review of Appendix 27 to the Radio Regulations. The following were identified:

a. It is noted that frequency bands between 2 850 kHz and 22 000 kHz allocated exclusively to the aeronautical mobile (R) service, and the frequency separation between carrier (reference) frequencies shall be 3 kHz. However, not all of the channels in the HF bands are available for use, so we need to see specific table allocation as shown in **Table 1 – HF frequency allocations** down below.

Table 1 HF Frequency allocations RR 2020 Vol. II

2 850-3 025 kHz	4 650-4 700 kHz	6 525-6 685 kHz	10 005-10 100 kHz	13 260-13 360 kHz
2 851 2 938	4 651 4 675	6 526 6 607	10 006 10 054	13 261 13 312
2 854 2 941	4 654 4 678	6 529 6 610	10 009 10 057	13 264 13 315
2 857 2 944	4 657 4 681	6 532 6 613	10 012 10 060	13 267 13 318
2 860 2 947	4 660 4 684	6 535 6 616	10 015 10 063	13 270 13 321
2 863 2 950	4 663 4 687	6 538 6 619	10 018 10 066	13 273 13 324
2 866 2 953	4 666 4 690	6 541 6 622	10 021 10 069	13 276 13 327
2 869 2 956	4 669 4 693	6 544 6 625	10 024 10 072	13 279 13 330
2 872 2 959	4 672 4 696	6 547 6 628	10 027 10 075	13 282 13 333
2 875 2 962		6 550 6 631	10 030 10 078	13 285 13 336
2 878 2 965		6 553 6 634	10 033 10 081	13 288 13 339
2 881 2 968	5 450-5 480 kHz	6 556 6 637	10 036 10 084	13 291 13 342
2 884 2 971	Region2	6 559 6 640	10 039 10 087	13 294 13 345
2 887 2 974	5 451 5 466	6 562 6 643	10 042 10 090	13 297 13 348
2 890 2 977	5 454 5 469	6 565 6 646	10 045 10 093	13 300 13 351
2 893 2 980	5 457 5 472	6 568 6 649	10 048 10 096	13 303 13 354
2 896 2 983	5 460 5 475	6 571 6 652	10 051	13 306 13 357
2 899 2 986	5 463	6 574 6 655		13 309
2 902 2 989		6 577 6 658	11 275-11 400 kHz	
2 905 2 992	5 480-5 680 kHz	6 580 6 661	11 276 11 339	17 900-17 970 kHz
2 908 2 995	5 481 5 580	6 583 6 664	11 279 11 342	17 901 17 937
2 911 2 998	5 484 5 583	6 586 6 667	11 282 11 345	17 904 17 940
2 914 3 001	5 487 5 586	6 589 6 670	11 285 11 348	17 907 17 943
2 917 3 004	5 490 5 589	6 592 6 673	11 288 11 351	17 910 17 946
2 920 3 007	5 493 5 592	6 595 6 676	11 291 11 354	17 913 17 949
2 923 3 010	5 496 5 595	6 598 6 679	11 294 11 357	17 916 17 952
2 926 3 013	5 499 5 598	6 601 6 682	11 297 11 360	17 919 17 955
2 929 3 016	5 502 5 601		11 300 11 363	17 922 17 958
2 932 3 019	5 505 5 604	8 815-8 965 kHz	11 303 11 366	17 925 17 961
2 935	5 508 5 607	8 816 8 891	11 306 11 369	17 928 17 964
	5 511 5 610	8 819 8 894	11 309 11 372	17 931 17 967
	5 514 5 613	8 822 8 897	11 312 11 375	17 934
	5 517 5 616	8 825 8 900	11 315 11 378	
	5 520 5 619	8 828 8 903	11 318 11 381	21 924-22 000 kHz
	5 523 5 622	8 831 8 906	11 321 11 384	21 925 21 964
	5 526 5 625	8 834 8 909	11 324 11 387	21 928 21 967
	5 529 5 628	8 837 8 912	11 327 11 390	21 931 21 970
	5 532 5 631	8 840 8 915	11 330 11 393	21 934 21 973
	5 535 5 634	8 843 8 918	11 333 11 396	21 937 21 976
	5 538 5 637	8 846 8 921	11 336	21 940 21 979
	5 541 5 640	8 849 8 924		21 943 21 982
	5 544 5 643	8 852 8 927		21 946 21 985
	5 547 5 646	8 855 8 930		21 949 21 988
	5 550 5 649	8 858 8 933		21 952 21 991
	5 553 5 652	8 861 8 936		21 955 21 994
	5 556 5 655	8 864 8 939		21 958 21 997
	5 559 5 658	8 867 8 942		21 961
	5 562 5 661	8 870 8 945		
	5 565 5 664	8 873 8 948		
	5 568 5 667	8 876 8 951		
	5 571 5 670	8 879 8 954		
	5 574 5 673	8 882 8 957		
	5 577 5 676	8 885 8 960		
	5 680	8 888		

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b. According to **Table 1**, there are approximately 436 channels for allocation, yet unavailable to allocate due to technical requirements consideration such as service range, interference range, repetition distance, and the type of frequencies that will be allotted during the night and day.

c. Allotments in the Appendix 27 Plan are made to Major World Air Route Areas (MWARA) for long-distance international services where more than one country is affected. As shown to the **Figure 1 – MWARA Area** down below, in specific, Indonesia is covered by areas SEA-3, SEA-1B, and CWP.

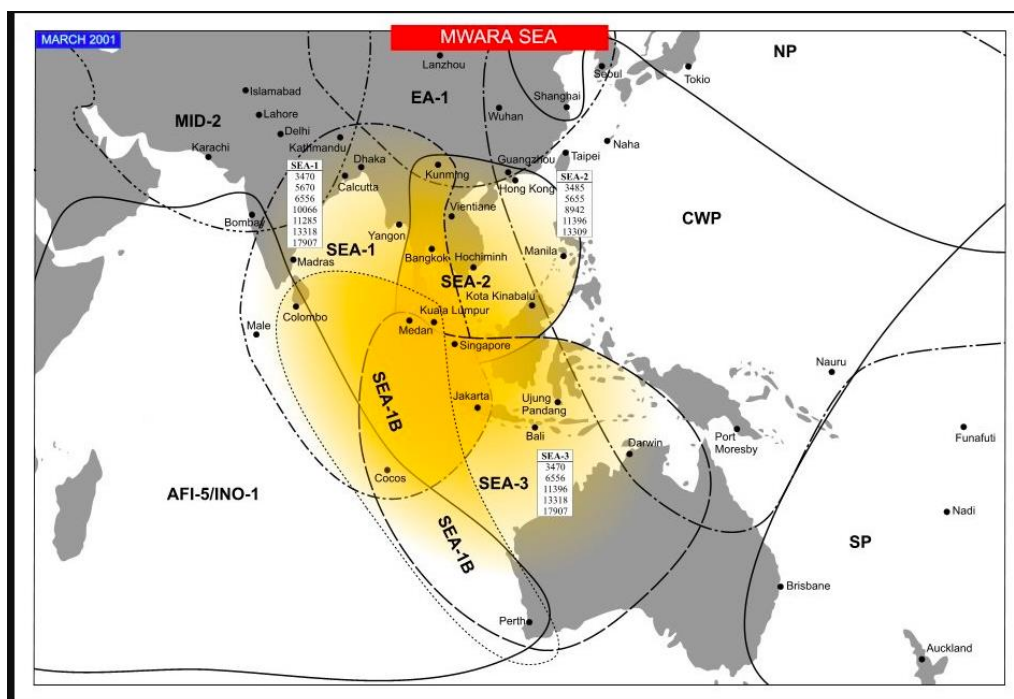


Figure 1 MWARA Area

Source: <http://lwra.us/wp-content/uploads/2015/01/SEA2.jpg>

d. Furthermore, Regional and domestic air route areas (RDARA) allotments are made in other cases. As shown in **Figure 2 – RDARA Area**, the frequencies that can be utilized are noted to the special area code with detailed information in paragraph 27/213 Section II of Appendix 27 to Radio Regulation, which means that not all of the channels mentioned in ICAO Documents are available for use.

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b. There's an Agenda Item 1.9 in WRC-23 to review Appendix 27 of the Radio Regulation in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated, which have possibly affected to the States that utilize those HF bands.

c. Sharing experiences among APAC Region states is necessary to determine best practices in the HF frequency spectrum assignment process.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate
