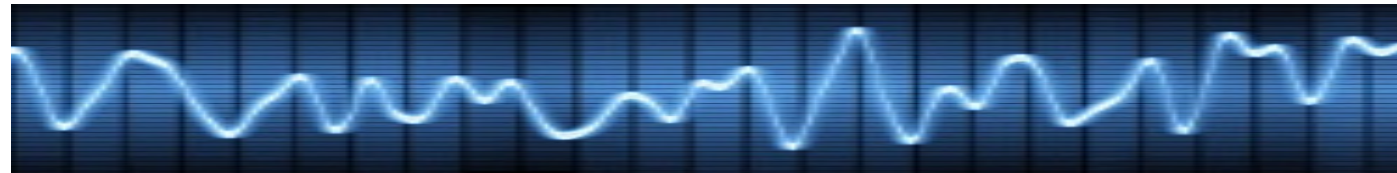




Frequency Management Webinar

ICAO Handbook on Radio Frequency Spectrum Requirements
for Civil Aviation

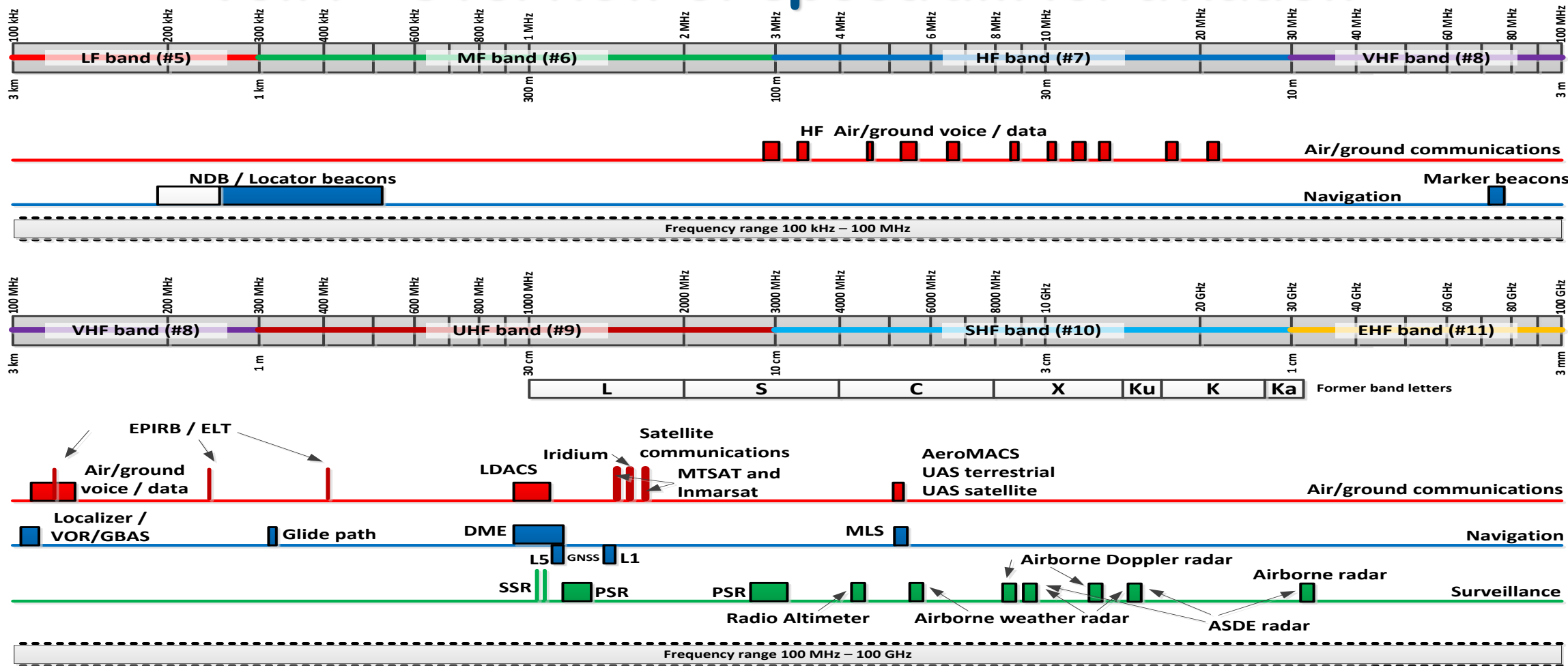


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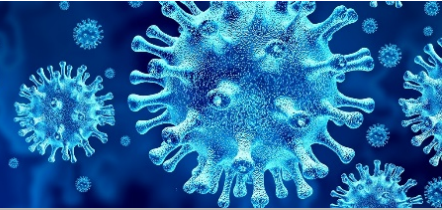
Introduction

- **Volume I: Spectrum Management**
 - Spectrum strategy - Provides for the long term of current and future spectrum usage of radio systems
 - ICAO policies on use of aeronautical spectrum to support the ICAO spectrum strategic objectives
 - ICAO position for future ITU WRC .
- **Volume II: Frequency Management**
 - ICAO Frequency Assignment Planning

Vol. I – Overview of spectrum for aviation



Notes:
 Drawing not to scale
 Not all Regional or sub-Regional allocations are shown
 Band identification (e.g. VHF) and band # per Radio Regulations
 The satellite communication bands used by MTSAT and Inmarsat are not allocated to the Aeronautical Mobile Satellite (R) Service



Vol. II – Frequency assignment planning

- Provides for globally harmonized frequency assignment planning criteria and guidance material to support the application of SARPs in Annex 10, Vol. V
- Developed in conjunction with the revisions to Annex 10, Vol. V
- Developed by the frequency Spectrum Management Panel (FMSP)
- **Implementation has been agreed through the relevant Regional eANP**
- Support the development of a frequency assignment plan which encompasses Global and Regional COM lists and the Global Air Navigation Plan

Vol. II – Frequency assignment planning

Compatibility criteria for frequency coordination (1)

- Frequency assignment planning criteria are to be considered as a generic technical measure to support frequency coordination.
- Planning criteria provide for a rather conservative method to assign frequencies without causing harmful interference.
- In most cases, a detailed technical analysis may result in reduced geographical separation being required.
- Consideration of actual operational use

Vol. II – Frequency assignment planning

Compatibility criteria for frequency coordination (1)

- In many of such cases these frequency assignments may be considered ***operationally*** compatible
 - consideration of the operational use
 - absence of interference reports
 - consideration of the effect of the terrain.
 - as result of a detailed analysis of the technical characteristics of both the desired and undesired stations
- Non-compatible identification in Frequency Finder does not necessarily imply operational incompatibility

Vol. II – Frequency assignment planning

Compatibility criteria for frequency coordination (1)

- A station that is considered “Not Compatible” because it does not meet the ICAO frequency assignment planning criteria is not, by default, also operationally “Not Compatible” .
- Frequency Finder displays geographical areas where interference is *predicted* to support a more detailed analysis.

Use of frequencies

Allotment of frequencies

- Annex 10 includes an allotment plan for national and for international/national use
- These allotments are generally not widely observed.
- In order to achieve international protection from harmful interference **ALL** frequency assignments in the band 117.975 – 137 MHz need to be coordinated through ICAO



Use of frequencies Special frequencies

- Special frequencies identified in Annex 10:
 - 121.500 MHz; aeronautical emergency frequency
 - 123.100 MHz[auxiliary frequency (SAR)
 - 123.450 MHz: Air-to-air frequency
- These frequencies, including any appropriate guard band, are not assignable with Frequency Finder but may be entered in the COM list 3 without a compatibility test being required. Registration of assignments on these frequencies with ICAO is not necessary.
- The band 136.500 – 136.975 MHz is only available for facilities with 25 kHz channel spacing.

Use of frequencies

Regional Frequency Allotment Plans

- Each Region has developed a frequency allotment plan where sub-bands in the band 117.975 - 137 MHz have been allotted to specific air-ground communication services
- Review of the allotment plan may increase the amount of spectrum that can be used for ATC Services
 - Current sub-bands that are not allotted
 - Band that is currently allotted for AOC

while protecting any frequency assignment that has already been incorporated in the COM list 3)

Aeronautical Mobile Service (AMS)

2.42 Frequencies should be assigned to all VHF aeronautical mobile service (AMS) facilities in accordance with the principles laid out in Annex 10, Volume V and *ICAO Handbook on Radio Frequency Spectrum Requirements for Civil Aviation* (Doc 9718) Volumes I and II, and take into account:

- a) agreed geographical separation criteria based on 25 kHz or 8.33 kHz interleaving between channels;
- b) agreed geographical separation criteria for the implementation of VDL services;
- c) the need for maximum economy in frequency demands and in radio spectrum utilization; and
- d) a deployment of frequencies which ensures that international services are planned to be free of interference from other services using the same band.

2.43 The priority order to be followed in the assignment of frequencies to service is:

- a) ATS channels serving international services (ACC, APP, TWR, FIS);
- b) ATS channels serving national purposes;
- c) channels serving international VOLMET services;
- d) channels serving ATIS and PAR; and
- e) channels used for other than ATS purposes.

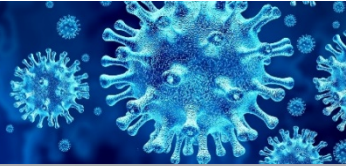
2.44 The criteria used for frequency assignment planning for VHF AMS facilities serving international requirements should, to the extent practicable, also be used to satisfy the need for national VHF AMS facilities.



Use of frequencies

Uniform values for DOC

- A table with uniform values for the DOC of specific Services has been developed and has been in use for many years.
 - E.g. standard DOC for TWR is 25/40 (25 NM, 4000ft)
- Frequency Finder provides the option to “tailor” the actual DOC to the minimum DOC that is operationally required. Such use may be more frequency efficient.



Thank you for your Attention