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Handbook on Radio Frequency Spectrum Requirements for Civil Aviation

Volume II - Frequency assignment planning criteria for
aeronautical radio communication and navigation systems (ICAO Doc 9718, Volume II)

(3) Use of Frequencies

**Workshop/Training on
“Frequency Finder 2024” application**

Nairobi, Kenya | 12 – 16 August 2024

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Use of frequencies Allotment of frequencies

Annex 10 Vol V includes an allotment plan for national and for international/national use

In order to achieve international protection from harmful interference, **ALL** frequency assignments in the band 117.975 – 137 MHz need to be coordinated through the ICAO Regional Office

Table 4-1. Allotment table

<i>Block allotment frequencies (MHz)</i>	<i>Worldwide utilization</i>	<i>Remarks</i>
a) 118.000 – 121.450 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in the light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
b) 121.500	Emergency frequency	See 4.1.3.1. In order to provide a guard band for the protection of the aeronautical emergency frequency, the nearest assignable frequencies on either side of 121.500 MHz are 121.450 MHz and 121.550 MHz.
c) 121.550 – 121.9917 inclusive	International and National Aerodrome Surface Communications	Reserved for ground movement, pre-flight checking, air traffic services clearances, and associated operations.
d) 122.000 – 123.050 inclusive	National Aeronautical Mobile Services	Reserved for national allotments. National assignments are covered by the provisions of 4.1.4.8 and 4.1.4.9.
e) 123.100	Auxiliary frequency SAR	See 4.1.3.4. In order to provide a guard band for the protection of the aeronautical auxiliary frequency, the nearest assignable frequencies on either side of 123.100 MHz are 123.050 MHz and 123.150 MHz.
f) 123.150 – 123.6917 inclusive	National Aeronautical Mobile Services	Reserved for national allotments, with the exception of 123.450 MHz which is also used as an air-to-air communications channel (see g)). National assignments are covered by the provisions of 4.1.4.8 and 4.1.4.9.
g) 123.450	Air-to-air communications	Designated for use as provided for in 4.1.3.2.
h) 123.700 – 129.6917 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
i) 129.700 – 130.8917 inclusive	National Aeronautical Mobile Services	Reserved for national allotments but may be used in whole or in part, subject to regional agreement, to meet the requirements mentioned in 4.1.6.1.3.
j) 130.900 – 136.875 inclusive	International and National Aeronautical Mobile Services	Specific international allotments will be determined in light of regional agreement. National assignments are covered by the provisions in 4.1.4.8 and 4.1.4.9.
k) 136.900 – 136.975 inclusive	International and National Aeronautical Mobile Services	Reserved for VHF air-ground data link communications.



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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.
- Some Regions have allotted special frequencies for harmonized use throughout the Region.



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Use of frequencies **Special frequencies VDL**

- The band 136.500 – 136.975 MHz is only available for facilities with 25 kHz channel spacing.
- It is preferred that frequency assignments for VDL will be made in this band
- It is proposed that on a Regional basis, all Regions allot the band 136.5 – 136.975 MHz for VDL (VDL Mode 2 and VDL Mode 4)



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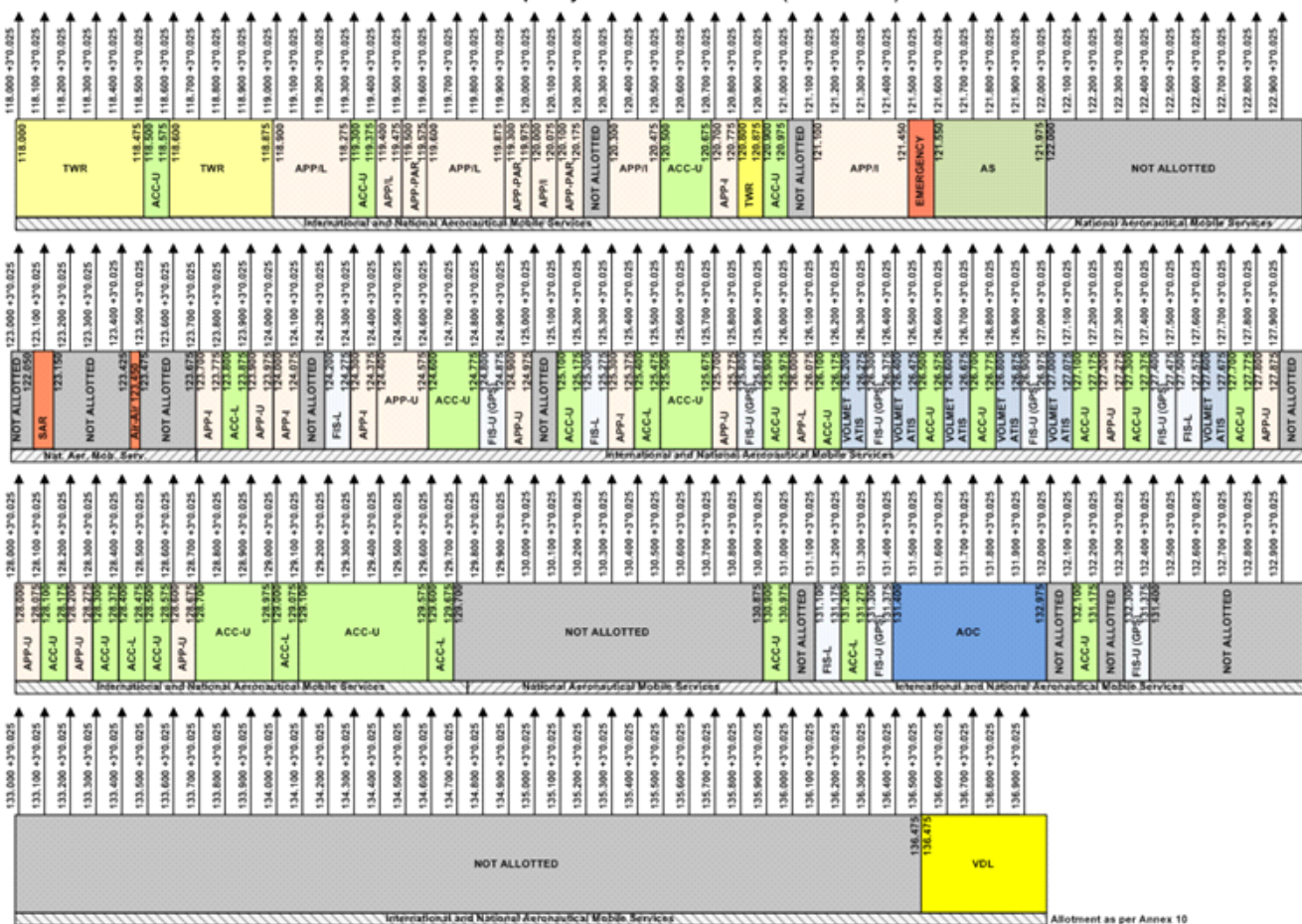
Use of frequencies

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)

VHF COM Frequency Allotment Plan for AFI (Re. AFI ANP)



LEGEND	TWR	APP	ACC	FIS	VOLMET ATIS	AS	Special frequencies	Not allotted	AOC (Aeronautical)	VDL
Aerodrome Control Service										
Approach Control Service										
Area Control Service										
Flight Information Service										
VOLMET Broadcasts										
Automatic Terminal Information Service										
Aerodrome Surface Automatic Terminal (Surface Movement Control)										
(not assignable)										
Operational Control										
(VHF Digital Link)										



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.
- A review of the uniform values may be considered in particular with regard to the difference between the uniform values used in the EUR Region and in other Regions



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Use of frequencies Frequency coordination

- Frequency coordination takes place between States and the Regional Office. States can submit their frequency requirements to the Regional Office in any format (letter, email etc.)
- Pre-coordination of new or modified frequency assignments between States is encouraged but not required
- The relevant Regional Office updates the (global) COM list 3
- Inter-regional coordination takes place between the Regional Offices
- Current coordination methods are not being changed
- States can submit their requirements to the Regional Office, using the **- - Export submissions -** button in Frequency Finder.

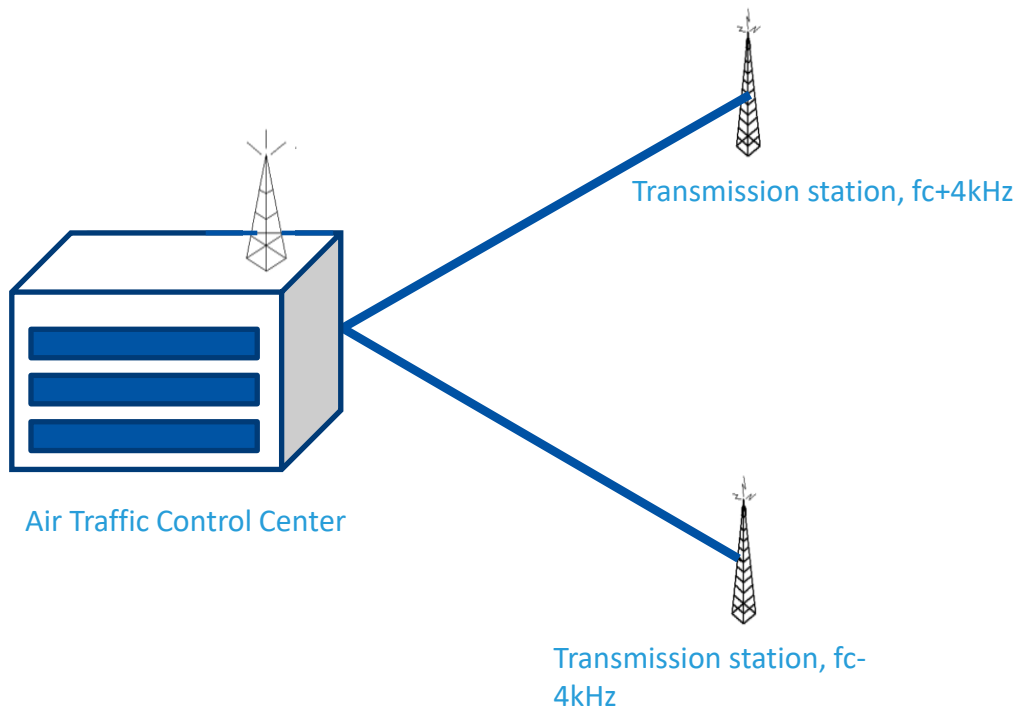
This will generate an Excel file that should then be emailed to the Regional Office.



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Extended Range (ER) Facilities



- For large geographical ATC sectors or sectors with difficult propagation, the VHF coverage cannot be met with a single ground transmitter.
- In such coverage situations, instead of using several different frequencies, additional coverage is provided through installing extended range stations (forward relay).
- These stations can operate on the same frequency using the offset carrier system or multi-carrier system.



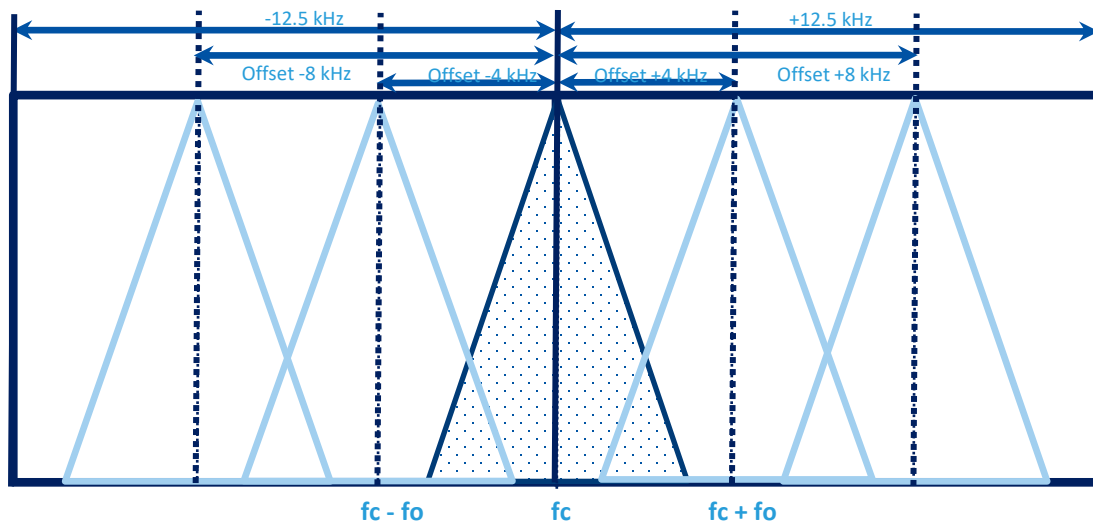
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Extended Range (ER) Facilities Cont.



Offset carrier
For planning extended range VHF facilities





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Extended Range (ER) Facilities Cont.

- ER Stations are implemented to provide coverage **over a large geographical area that cannot be covered by a single VHF station.**
- The ER stations operate on the **same frequency in the off-set carrier configuration** (refer to Annex 10).
- All stations within same ER family
 - ***No longer considered as interferer between each other***

(Refer to Frequency Finder Manual)



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QUESTIONS?



Thank You!