Aeronautical Spectrum Workshop
Preparation for WRC-15
Cairo, Egypt, 16 – 17 February 2015

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ICAO
Overview

- Volume I – ICAO Spectrum Strategy and Policies
- Volume II – ICAO Frequency Assignment Planning

Pre-publication drafts of Doc 9718 and other relevant material can be downloaded, free of charge, from the ACP website (Repository section) at http://www.icao.int/safety/acp

Handbook Volume I
Spectrum Strategy and Policies

Overall ICAO Spectrum Policy
(approved by Council)

- ICAO Spectrum Strategy
  ✓ Long term spectrum use of current and future radio systems

- ICAO Spectrum Policy Statements
  ✓ Specific actions to assist in meeting the Strategic Objectives

- ICAO Position for future WRC’s
  ✓ Medium and long term availability of spectrum for aviation
Role of ICAO
✓ In ITU-R (Study Groups) and in Regional Telecommunication Organizations
✓ At ITU World Radiocommunication Conferences
✓ In frequency coordination and registration (also ITU)

Role of the ITU and Regional Telecommunication Organizations
✓ Develop technical material (ITU-R Study Groups)
✓ Amend Radio Regulations (at WRCs)
Policy Statements on frequency allocations and technical details (Chapter 7), including:

✓ Frequency allocations and footnotes in ITU Radio Regulations
✓ Information on Aviation use
✓ Commentary (specific comments on ITU and ICAO review in frequency coordination and registration (also ITU)

Spectrum Strategy (Chapter 8)
Handbook Volume II
Frequency assignment planning

Published for the first time in 2013

Provides 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 ACP Working Group F (now FSMP)
- Implementation through Regional Air Navigation Agreement by PIRG
- To support the development of Global COM lists and the Global Air Navigation Plan
Handbook Volume II
Frequency assignment planning

Chapter 1 (1) General methodology

➢ General methodology for compatibility analysis
  ✓ General model for compatibility assessment
  ✓ Based on:
    • Protection of desired signal at receiver input
    • Not to exceed maximum permissible distortion of receiver output signal
Propagation model
✓ Based on free space propagation
  (Re. Recommendation ITU-R P.525)

Propagation model does not accommodate certain phenomena which are difficult to predict such as
✓ Changes in the refractive index of the atmosphere
✓ Ducting

ITU has developed propagation curves for aeronautical communication and navigation systems (Recommendation ITU-R P.528)
Interference model (co-frequency separation)
✓ Conforms to the general methodology in Chapter 1
✓ Model for establishing separation distances to prevent air-to-air interference:

✓ Minimum separation between stations A and B:
Range A + Radio horizon A + Radio Horizon B + Range B
Interference model (co-frequency)

✓ Aeronautical broadcast stations (ATIS, VOLMET)
  • Do not involve aircraft transmission
  • Separation distances are less

Interference model (adjacent frequency separation)

✓ Same model as for co-frequency separation
✓ Takes into account the attenuation of the undesired signal by the (aircraft) receiver
✓ 1st adjacent channel separation (25 kHz): 10 NM
Chapter 2 (3)
Frequency assignment planning criteria for VHF air-ground communication systems

- Frequency separation and channelling
  - 25 kHz and 8.33 kHz channel spacing.
  - Special consideration for mixed environment where both are applied

- Designated Operational Coverage (DOC)
  - Table of uniform values for DOC
  - Complies with common values used in most Regions
  - Area services ACC-FIS – are in many cases not specified
Handbook Volume II
Frequency assignment planning

Chapter 2 (4)
Frequency assignment planning criteria for VHF air-ground communication systems

- Calculation of separation distances.
  - Methodology for establishing separation distances
  - Air/ground communications
  - Aeronautical broadcast communications
  - Aerodrome surface communications

For each of these types the Handbook clarifies the principles and method used when the separation distances were established. A summary of the results (25 kHz channel spacing) is on the next slide.
**Handbook Volume II**

**Frequency assignment planning**

**Chapter 2 (5)**

Frequency assignment planning criteria for VHF air-ground communication systems

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Frequency planning criteria for VDL were considered by the ACP between 2002 – 2008.

Same methodology as for developing planning criteria for VHF voice systems.

Criteria for VDL (Mode 2 and Mode 4):

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The Handbook contains specific considerations to be taken into account when using VDL on the surface of an airport.
Future work will concentrate on developing harmonized and updated planning criteria for aeronautical radionavigation systems.

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