Terrestrial Radiocommunication Services and Plans in Region 2 (in Addition to Broadcasting)
Scope: Terrestrial radiocommunication services in addition to broadcasting

- Fixed service
- Mobile services (land, aeronautical and maritime mobile)
- Radionavigation services (aeronautical and maritime radionavigation services)
- Radiolocation, meteorological aids, standard frequency and time signal

Regulations applicable to FXM in Region 2

<table>
<thead>
<tr>
<th>Service</th>
<th>MIFR Entries</th>
<th>July 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile</td>
<td>1033640</td>
<td>47.4%</td>
</tr>
<tr>
<td>Fixed</td>
<td>998299</td>
<td>93.2%</td>
</tr>
<tr>
<td>Broadcasting</td>
<td>121308</td>
<td>98.7%</td>
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<tr>
<td>Radionavigation</td>
<td>25465</td>
<td>99.9%</td>
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</table>
Outline of presentation:

- Categories of FXM frequency bands
- Frequency plans for FXM services
  - AP25
  - AP26
  - AP27
- Examination of FXM assignments under RR Article 11
  - Regulatory
  - Conformity to Plan
  - Coordination
  - Technical
- Means of identification for radiocommunication stations
### Categories of frequency bands

#### Planned bands
- Bands governed by a frequency Plan
- Very high level of regulations
- Example: Appendix 25 Plan for HF maritime mobile service

#### Shared bands
- Bands shared with space services
- Regulations by power limits and coordination procedures
- Example: 3.4 – 4.2 GHz, FX vs. FSS

#### Other bands
- Bands subject to very few RR restrictions
- Regulations are left to administrations
- Example: mobile service in 890 - 960 MHz

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Regulations of FXM services and BR activities significantly depend on the category of frequency band
Frequency plans for FXM services
Overview

Worldwide frequency allotment plans

**AP25** - Plan for maritime mobile service, HF (4000 – 27500 kHz)

**AP26** - Plan for aeronautical mobile (off-route) service, HF (3025 – 18030 kHz)

**AP27** - Plan for aeronautical mobile route service, HF (2850 – 22000 kHz)

Other Plans do **not** apply to Region 2:
- GE85 Plans for MMS, MMS (DSC), maritime radionavigation and aeronautical radionavigation
AP25: Allotment plan for the maritime mobile service
Scope and characteristics

**Scope**
- Worldwide allotment plan, maritime mobile service (MMS)
- Coast radiotelephone stations in 4000 - 27500 kHz
- 240 channels; 154 allotment areas;
- Number of “restricted” allotments: limitations on service area, power, hours of operation, etc.

**Characteristics**
- 3 kHz channels (separation between reference frequencies)
- Bandwidth: 2.8 kHz
- Class of emission: J3E or J2D
- Maximum peak envelope power: 10 kW
Example: use of 8783.4 kHz from AP25 plan

Channel on 8783.4 kHz is allotted to geographical area AUS. Australia may assign this channel to coast stations in the allotted area.
Channel on 8783.4 kHz has been assigned to 4 coast stations (as of July 2013)
Plan modification procedure (AP25, Section I) applies when:

- Administration has no allotment but needs one (AP25/1.1.1)
- Administration needs an additional allotment (AP25/1.1.2)
- Administration intends to replace an allotment by another one in the same band (AP25/1.25)
Submission of Appendix 4 information to the BR (Electronic notice form T15)
Publication of the information and apparent incompatibilities in Special Section of BRIFIC
Coordination with affected administrations
Possible assistance of the BR at different stages of coordination
Successful coordination => recording in the Plan
Non-reply or continuing disagreement => examination by the BR
  If examination results are favorable => Plan update
  If examination results are unfavorable => BR searches for the least affected channel and enters it in the Plan, if requested by the administration

As of July 2013:
  3988 Plan entries
  14063 related assignments in MIFR
Scope

- Worldwide plan for aeronautical mobile off-route service
- Planned band: 3025 - 18030 kHz (10 sub-bands)
- Carrier frequencies, allotment areas

Characteristics

- Maximum bandwidth: 2.8 kHz
- Classes of emission:
  - Telephony: J3E
  - Telegraphy: A1A; A1B; F1B; (A,H)2(A,B); (R,J)2(A,B,D); J(7,9)(B,D,X)
- Mean effective radiated power (max.):
  - 1 kW (aeronautical stations)
  - 50 W (aircraft stations)
Administration has no allotment and needs one => BR selects an appropriate allotment and enters it in the Plan

Requests for an additional allotment => the allotment is entered in the Plan only if it is compatible with the remaining allotments

Requests for the suppression of an allotment => BR cancels the allotment

As of July 2013:
- 8403 Plan entries
- 42833 related assignments in MIFR
AP27: Allotment plan for aeronautical mobile (R) service
Scope and characteristics

Scope
- Worldwide plan for aeronautical mobile route service
- Planned band: 2850 - 22000 kHz
- Carrier frequencies, geographical areas (MWARA, RDARA, VOLMET areas)

Characteristics
- Classes of emission: J3E; H2B, J7B, J2D, J9X (A1A/A1B) and F1A/F1B
- Carrier frequencies: multiple of 1 kHz; separation = 3 kHz
- 1584 Plan entries (No plan modification procedure)

As of July 2013:
- 9700 related assignments in MIFR
Regional and domestic route areas of AP27 Plan in South America
Examination of FXM frequency assignments (RR Art. 11)
Stages of notice processing

Notification by administration ➔ Validation by BR ➔ Publication BRIFIC – Part I

Examinations by the BR, formulation of findings ➔ Publication BRIFIC – Part II
Publication BRIFIC – Part III ➔ Notice is recorded in MIFR ➔ Notice is returned
For planned bands: Regulatory (vis-à-vis Table of Frequency Allocations and other provisions of RR) and Conformity to Plan examinations

For shared bands: Regulatory (including Article 21 power limits) and Coordination examinations

For other bands: Regulatory examination (including No. 9.21 coordination)

In addition, examination of Probability of harmful interference (i.e. Technical examination) may be performed (mainly in the AP26 and AP27 planned bands when the assignment notified to the MIFR is not in conformity with the Plan)
Examination of FXM frequency assignments (RR Art. 11) (cont’d)
Types of examination by the BR (cont’d) – Logical flow

Notice Publication Part 1

- Regulatory examination
- Coordination examination
- Conformity with Plan examination
- Technical examination

Notice Publication Part 2 or 3
Article 4: general rules for assignment and use of frequencies

Article 5: frequency allocations - assignments should be in conformity with Table of Frequency Allocations and footnotes:
- Notified band within the band allocated to the service
- Receiving point is in country where allocation exists
- Category of allocation
- Coordination procedure of No. 9.21, when applicable

Article 9: coordination procedures

Appendix 5: identification of affected administrations for coordination

Appendix 7: determination of coordination area

Appendix 4: characteristics of assignments to be notified
Examination of FXM frequency assignments (RR Art. 11) (cont’d)
Applicable provisions (cont’d)

- **Article 8**: status of assignments recorded in the MIFR
- **Article 21**: sharing between terrestrial and space services:
  power limits on transmitters in fixed and mobile services
- **Other provisions**:
  - Art. 24 (Fixed Service)
  - Art. 43 (Aeronautical Mobile Service)
  - Art. 51, 52 (Maritime Mobile Service)
  - AP25 (Maritime Mobile Service)
  - AP26 (Aeronautical Mobile (OR) Service)
  - AP27 (Aeronautical Mobile (R) Service)
  - etc.
Examination of FXM frequency assignments (RR Art. 11) (cont’d)

Correspondence between services and station class codes

Reference: Section 6 of Chapter IV of the Preface to the BR IFIC

ALLOCATION TO TERRESTRIAL RADIOCOMMUNICATION SERVICES

FIXED

MOBILE

Generic

MAR

AER

LAND

RADIODETERMINATION

RADIO LOCATION

RADIO NAVIGATION

METEOROLOGICAL AIDS

AMATEUR

STANDARD FREQUENCY & TIME SIGNAL

BROADCASTING

Class of transmitting station

FX

FL

FC

FP

OE

FA

FD

FG

FB

LR

RN

NL

AL

SM

AT

SS

BC

BT

Class of receiving station

MO

MS

OD

MA

ML

MR

NR

RM

AM

SA
Examination of FXM frequency assignments (RR Art. 11) (cont’d)

Regulatory examination

Permitted classes of station

Class of transmitting station

- Fixed
- Land

Class of receiving station

- FX
- FB
- ML

Allocation to services

Region 2

24 000-24 450
FIXED
LAND MOBILE
## Allocation to services

<table>
<thead>
<tr>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
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</thead>
<tbody>
<tr>
<td>322-328.6</td>
<td>FIXED</td>
<td>5.149</td>
</tr>
<tr>
<td></td>
<td>MOBILE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RADIO ASTRONOMY</td>
<td></td>
</tr>
</tbody>
</table>

**Example for FIXED service with Favourable finding**

- Class of station FX
- Assigned frequency 327.0 MHz
- Bandwidth 3 MHz

**Example for FIXED service with Unfavourable finding**

- Class of station FX
- Assigned frequency 327.0 MHz
- Bandwidth 5 MHz

<table>
<thead>
<tr>
<th>328.6-335.4</th>
<th>AERONAUTICAL RADIONAVIGATION 5.258</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.259</td>
</tr>
</tbody>
</table>
Protection of space services in uplink (RR Article 21 power limits on transmitters in fixed and mobile services):

- **RR 21.6**: The following limits apply to assignments in bands of Table 21-2:
  - RR 21.3: e.i.r.p. ≤ 55 dBW
  - RR 21.4 (protection of GSO): e.i.r.p.:
    - ≤ 47 dBW within 0.5° of GSO
    - ≤ 47 dBW at 0.5° - 55 dBW at 1.50°
  - RR 21.5: Power to antenna:
    - ≤ 13 dBW in bands 1 - 10 GHz
    - ≤ 10 dBW above 10 GHz
  - RR 21.5A: Power to antenna
    - ≤ -3 dBW for FX in 18.6 - 18.8 GHz
No special procedures, but coordination is desirable

Role of ICAO and its regional offices: coordination of frequencies for (R) service in:
- exclusive HF bands (AP27)
- 117.975 - 137 MHz band

Notification to BR after coordination through ICAO regional office

RR contains some additional mandatory provisions, e.g. prohibition of public correspondence (nature of service ‘CP’ and ‘CR’) in the exclusive aeronautical bands
Standard procedure of Article 9 of RR

Res. 339 (Rev.WRC-07): coordination of NAVTEX services on 490 kHz, 518 kHz and 4209 kHz

- Performed through International Maritime Organization (IMO)
- IMO provides BR with coordination information
- BR publishes the information in List IV (List of Coast Stations and Special Services Stations)
Examination of FXM frequency assignments (RR Art. 11) (cont’d)
Coordination examination - When does it apply?

- If terrestrial transmitting station operates in frequency bands above 100 MHz shared with space services with equal rights and is located inside the coordination area of a receiving earth station
  => Protection of specific receiving earth station (RR 9.16, 9.18)

- If terrestrial transmitting station operates in a frequency band shared on an equal primary basis with the broadcasting-satellite service
  => Protection of BSS typical receiving earth stations: coordination of terrestrial transmitters vs. BSS service area (RR 9.19)

- Applicable to coordination of non-planned services in bands and areas governed by regional agreements
  => RJ88 in Region 2
Coordination of terrestrial transmitter with receiving earth station is necessary if there is frequency overlap and terrestrial station is located within coordination area.
Examination of FXM frequency assignments (RR Art. 11) (cont’d)
Conformity to Plan examination

- Notified frequency is in allotted channel listed in the Plan
- Notified geographical area corresponds to a Plan allotment
- Receiving area is within the allotment area
- Example for the maritime mobile Plan (AP25):

Channel 1813 is allotted to areas IND E and IND W.
Administration of India can assign this channel to any coast station in those areas.
Examined if a notice is in conformity with the technical principles of allotment plan, but not in conformity with the allotment plan

AP26:

Notice is examined with respect to the allotments in Part III of AP26 (No. 11.39C)

AP27:

Notice is examined as to whether the protection specified in AP27 is afforded to the allotments in the Plan and to assignments already recorded in the Master Register with a favourable finding (No. 11.39A)
Identification of radiocommunication stations
Means of identification (RR Article 19)

Call Signs (RR 19, Section III):
- BR allocates international call sign series to administrations (see AP 42)
- Based on these series, administrations assign call signs to specific stations (e.g. series HBA-HBZ for Switzerland)

Maritime Mobile Service Identities (MMSI) (RR 19, Section VI):
- BR allocates Maritime Identification Digits (MID) to administrations (e.g. 269 for SUI) (see Column 3 of Table 3 of Preface to List V)
- Administrations assign MMSIs to specific coast or ship stations

Selective Call Numbers (RR 19, Section V):
- Used in the maritime mobile service (see Column 5 of Table 3 of Preface to List V)

Other station identifications
- station name
- station location
- registration mark
- etc.
Identification signal shall be transmitted periodically by voice, telegraph code or in other forms

Example of a call sign:

DABEB
GLAD is an online data retrieval-system containing information on administrations, geographical designations and the means of identifications for radio stations (http://www.itu.int/ITU-R/go/GLAD)
Thank you