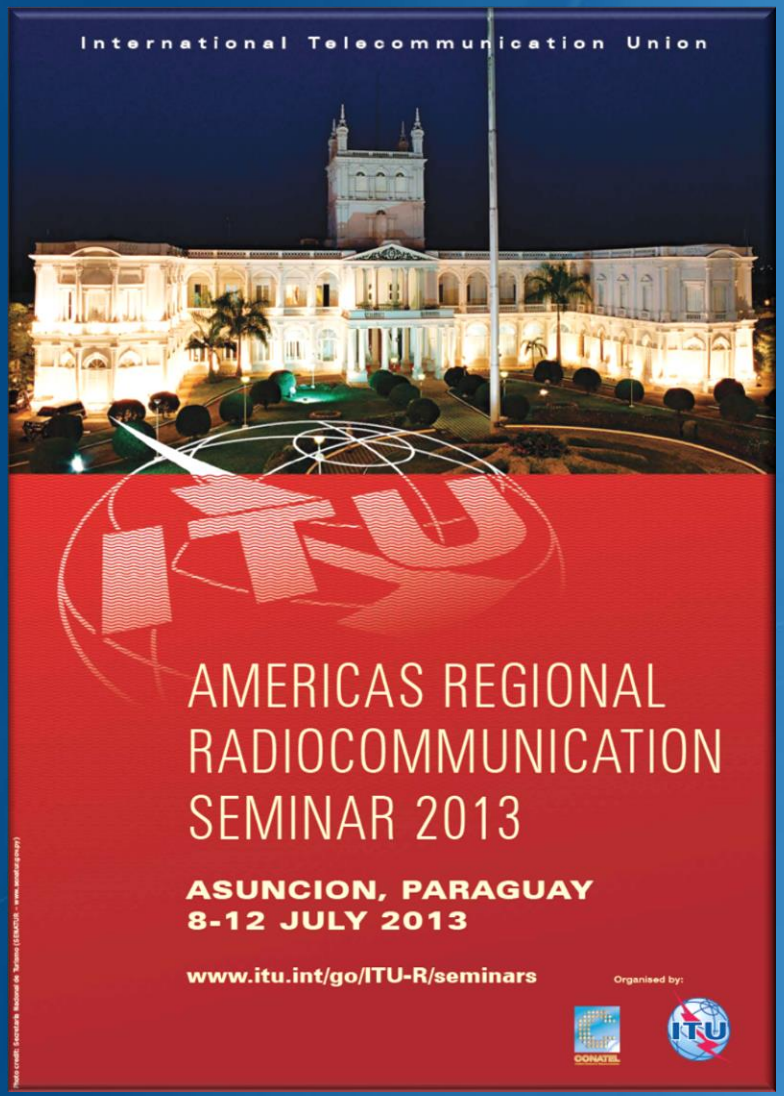


Terrestrial Radiocommunication Services and Plans in Region 2 (in Addition to Broadcasting)

Scope and outline of presentation

- 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

FXM

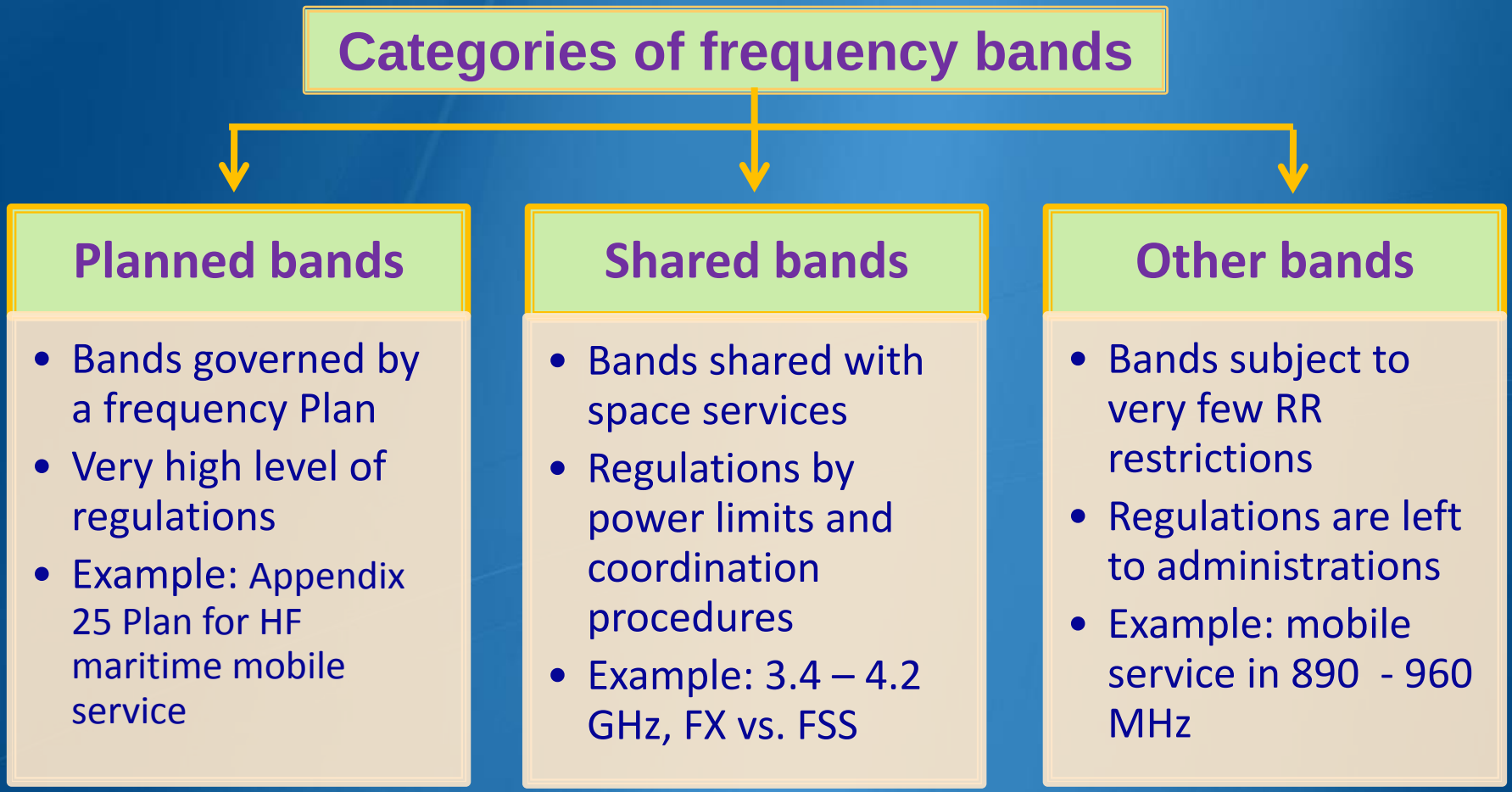
- Regulations applicable to FXM in Region 2

Service	MIFR Entries	July	2013		
Mobile	1033640	47.4%			
Fixed	998299	45.8%	**93.2%**		
Broadcasting	121308	5.6%	5.6%	**98.7%**	
Radionavigation	25465	1.2%	1.2%	1.2%	**99.9%**

Scope and outline of presentation (cont'd)

- 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 FXM frequency bands



- Regulations of FXM services and BR activities significantly depend on the category of frequency band

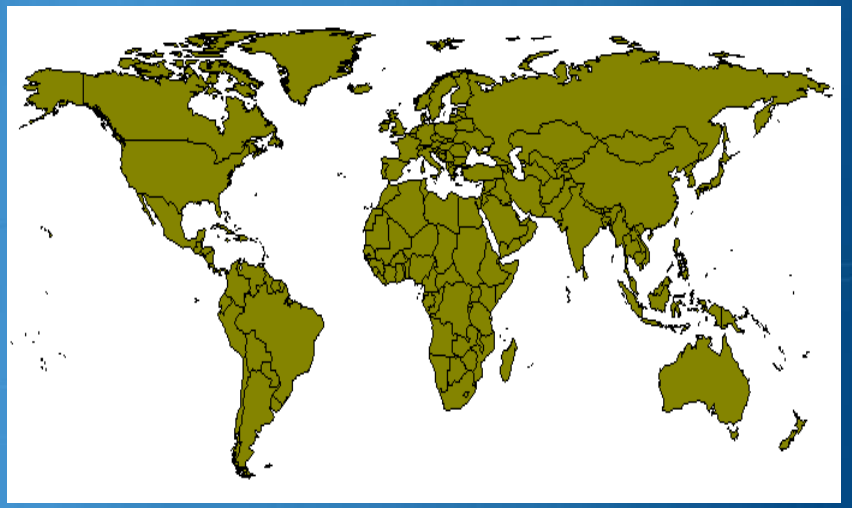
Frequency plans for FXM services
Overview

- 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)



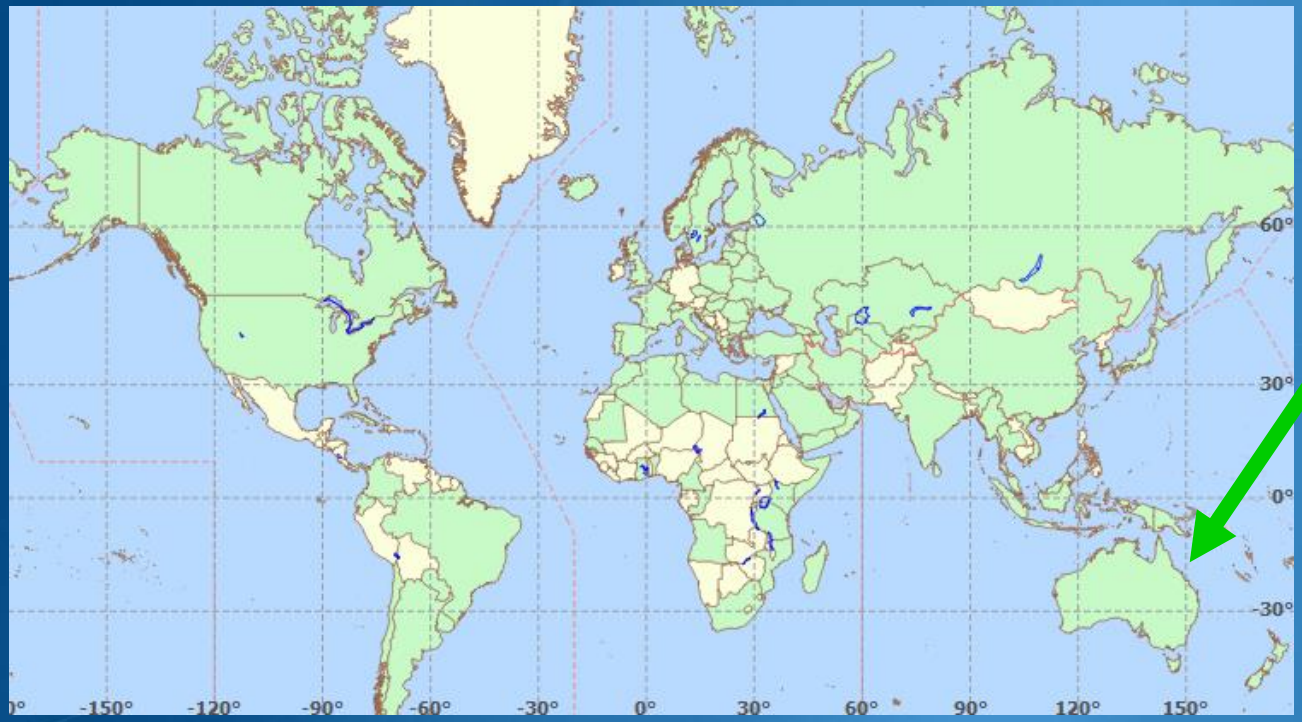
- Other Plans do not apply to Region 2:
  - GE85 Plans for MMS, MMS (DSC), maritime radionavigation and aeronautical radionavigation)

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

AP25: Allotment plan for the maritime mobile service (cont'd)
Example

Example: use of 8783.4 kHz from AP25 plan



8 783.4	AUS
(8 782)	E
	CHN
(827)	G
	HNG
	HRV
	IRN
	KEN
	MRC
	SUI
	UKR
	USA E
	USA SO
	USA W

Channel on 8783.4 kHz is allotted to geographical area AUS

Australia may assign this channel to coast stations in the allotted area

AP25: Allotment plan for the maritime mobile service (cont'd)

Example (cont'd)

8 783.4	AUS
(8 782)	B
	CHN
(822)	G
	HNG
	HRV
	IRN
	KEN
	MRC
	SUI
	UKR
	USA E
	USA SO
	USA W

Channel on 8783.4 kHz has been assigned to 4 coast stations (as of July 2013)

AP25: Allotment plan for the maritime mobile service (cont'd)
Plan modification procedure - When to apply?

- 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)

AP25: Allotment plan for the maritime mobile service (cont'd)
Plan modification procedure - Stages

- 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

AP25: Allotment plan for the maritime mobile service (cont'd)
Plan modification procedure - Outcomes

- 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

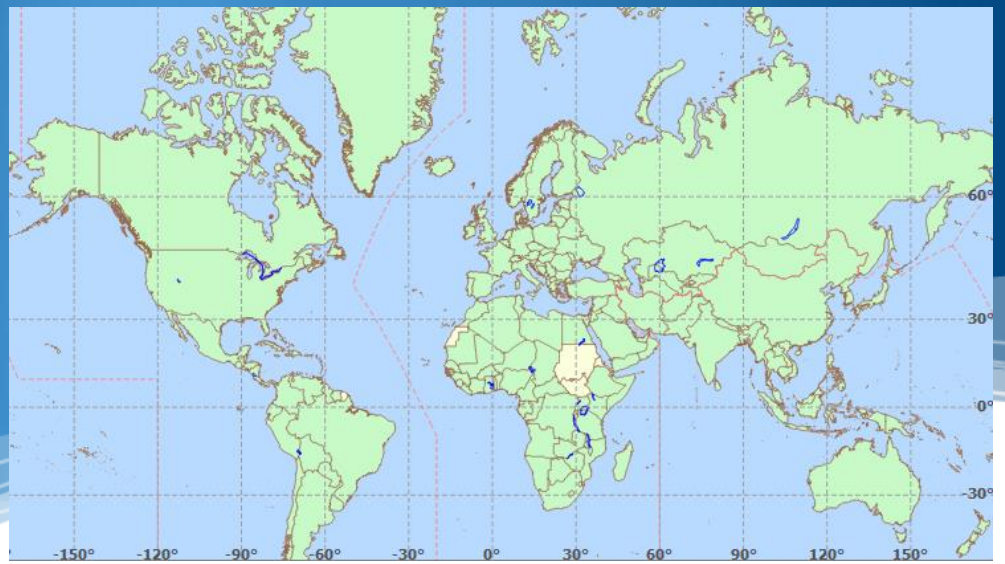
AP26: Allotment plan for aeronautical mobile (OR) service
Scope and characteristics

- 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)

AP26: Allotment plan for aeronautical mobile (OR) service (ct'd)

Plan modification procedure

- 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



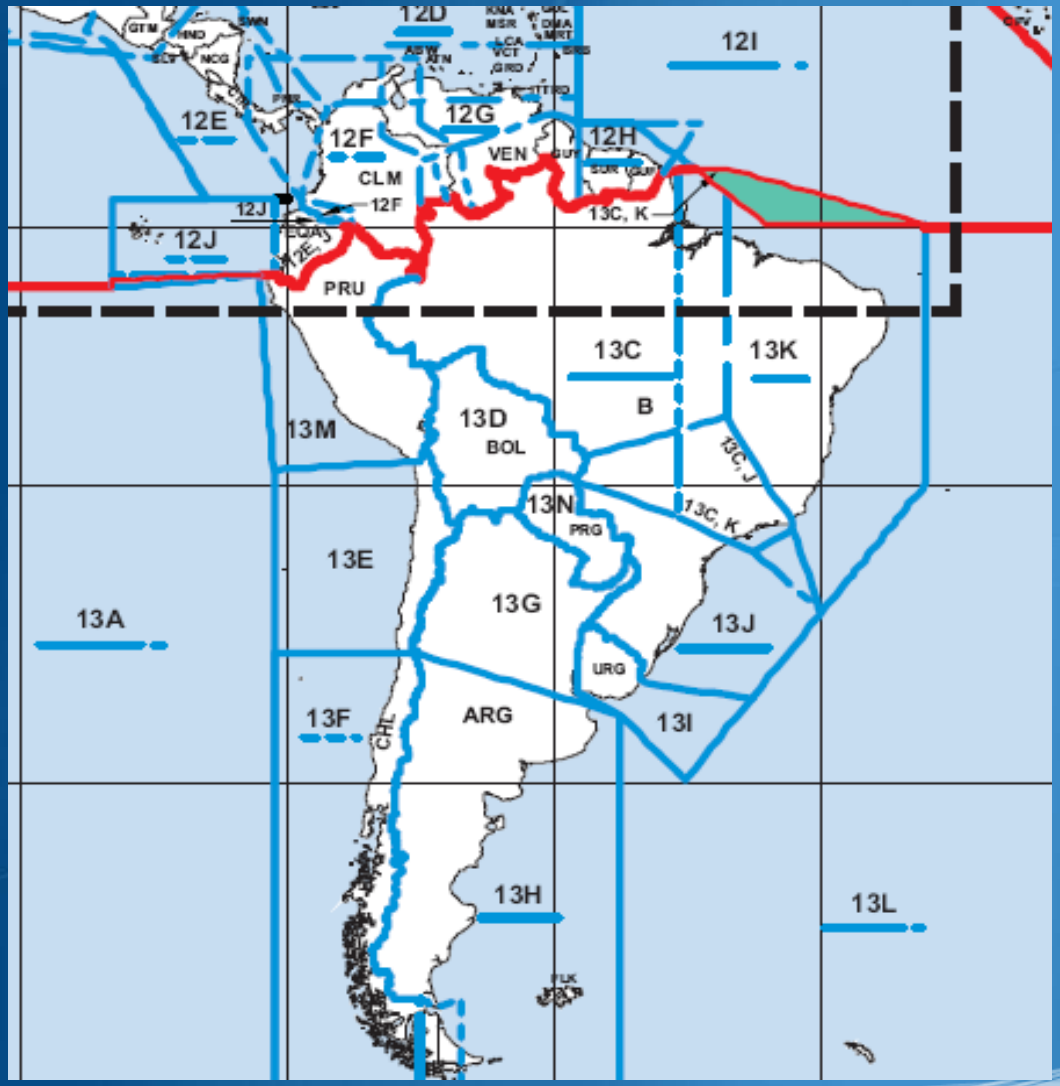
- As of July 2013:
  - 8403 Plan entries
  - 42833 related assignments in MIFR

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

AP27: Allotment plan for aeronautical mobile (R) service (cont'd)

Example



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 → *Notice is recorded in **MIFR***

Publication BRIFIC – Part III → *Notice is returned*

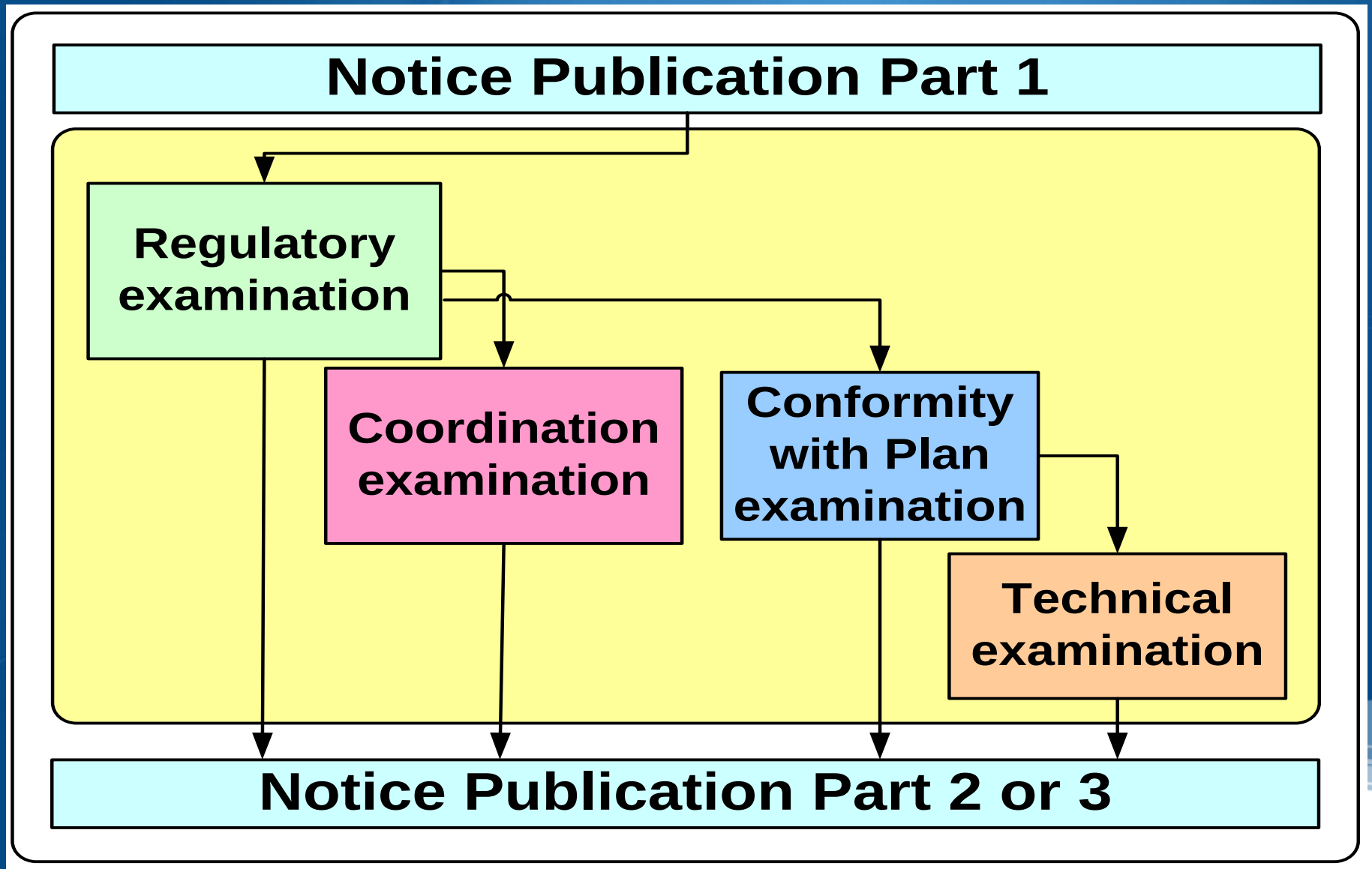
Examination of FXM frequency assignments (RR Art. 11) (cont'd)

Types of examination by the BR

- **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



Examination of FXM frequency assignments (RR Art. 11) (cont'd)
Applicable provisions

- **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)

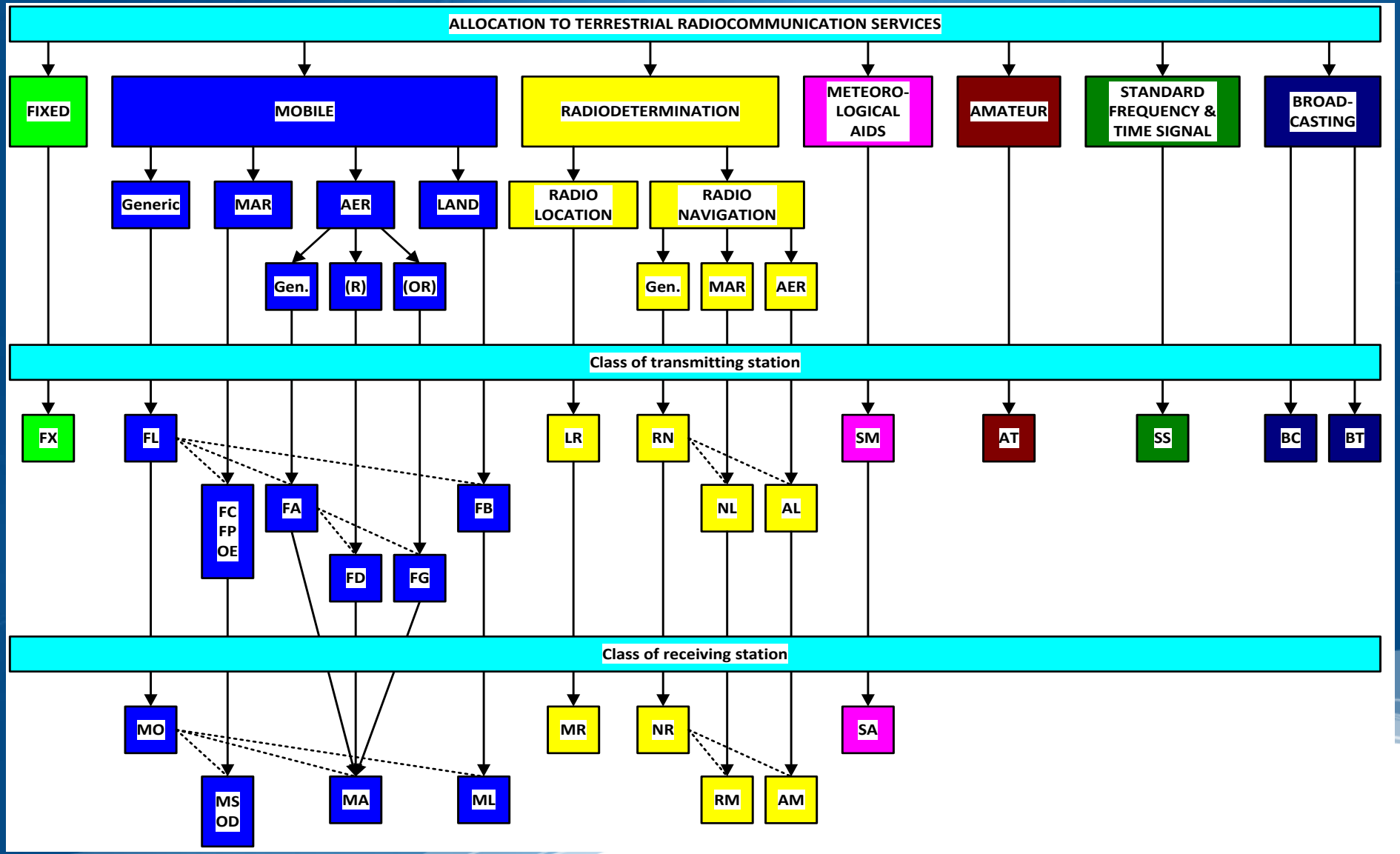
Applicable provisions (cont'd)

- **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

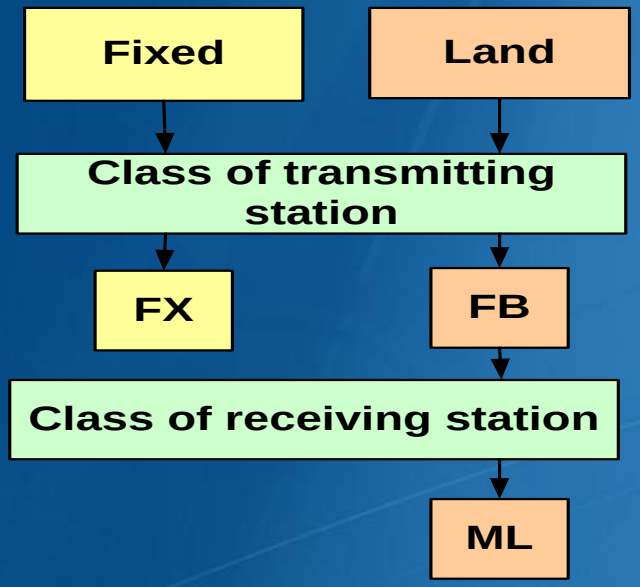
Reference: Section 6 of Chapter IV of the Preface to the BR IFIC



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

Regulatory examination

Permitted classes of station



Allocation to services
Region 2
24 000-24 450 FIXED LAND MOBILE

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

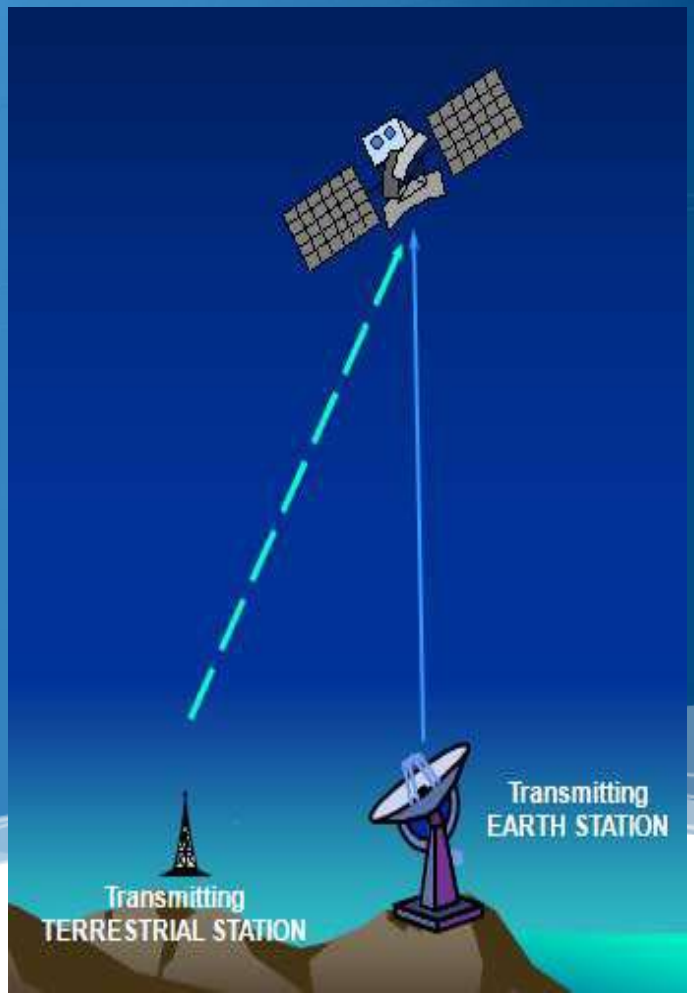
Regulatory examination (cont'd) - Example

Allocation to services		
Region 1	**Region 2**	**Region 3**
322-328.6	FIXED MOBILE RADIO ASTRONOMY 5.149	
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**		
328.6-335.4	AERONAUTICAL RADIONAVIGATION 5.258 5.259	

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

Regulatory examination (cont'd) - Protection of space services in uplink

- 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



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

Regulatory examination (cont'd) - Coordination procedures in the AMS

- 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

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

Regulatory examination (cont'd) - Coordination procedures in the MMS

- 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)

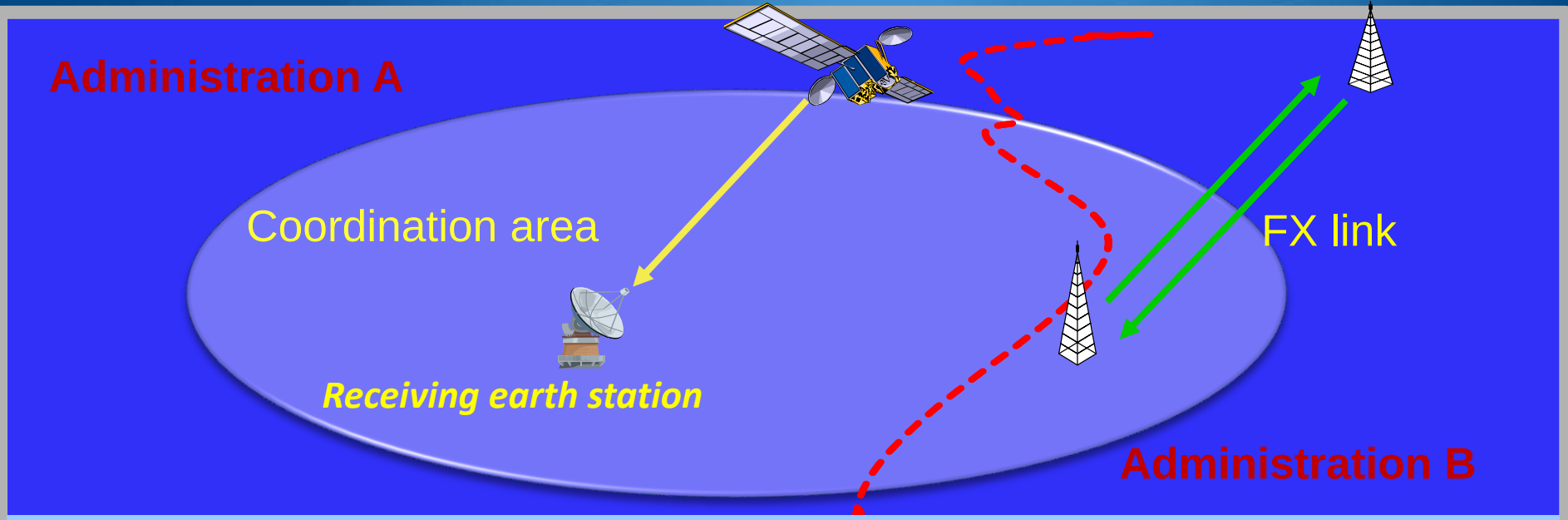
Coordination examination - When does it apply?

- 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

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

Coordination examination (cont'd) - Example

Allocation to services		
Region 1	**Region 2**	**Region 3**
8 025-8 175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	

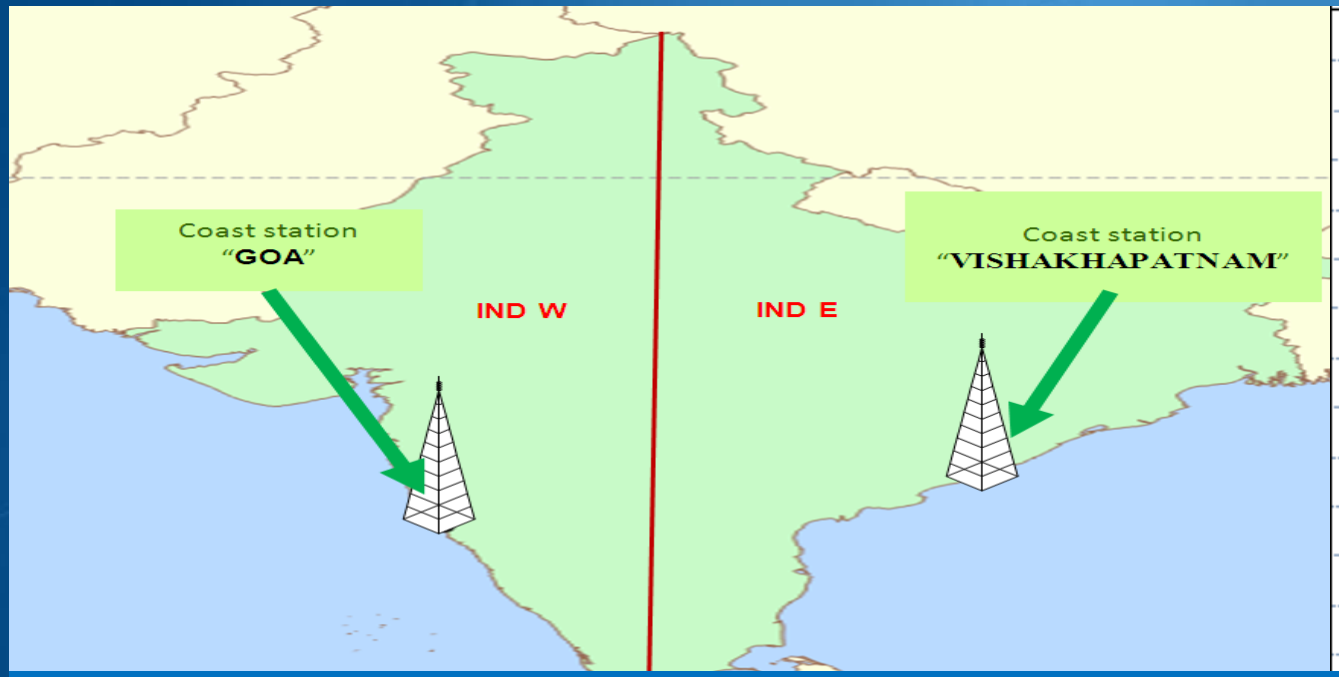


Coordination of terrestrial transmitter with receiving earth station is necessary if there is frequency overlap and terrestrial station is located within coordination area

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):



19 792.4	ALS	
(19 791)	CHN	
	E	
(1813)	F	
	HWA	
	IND E	
	IND W	
	J	
	PTR	
	S	ADD
	TUR	
	USA E	
	USA SO	

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.

Examination of FXM frequency assignments (RR Art. 11) (cont'd)
Technical examination (of probability of harmful interference)

- Applied 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 of radiocommunication stations (cont'd)
Example

- Identification signal shall be transmitted periodically by voice, telegraph code or in other forms
- Example of a call sign:

Identification of radiocommunication stations (cont'd)
Global Administration Data System (GLAD)

- 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