

# The role of Radio Regulations on spectrum management

**ITU-D Regional Development Forum  
for the Arab Region: "Access to  
spectrum, including broadcasting  
services – trends and technologies"**

**(Tunis, 1-3 June 2009)**



David Botha  
BR/TSD/BCD



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## Role of RR on Spectrum Management

### Overview


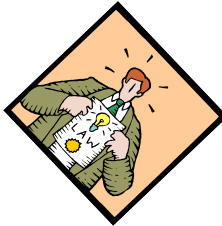


- Radio Regulations overview
- Planning of the frequency bands
- Notification and registration (Art 11)

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## Role of RR on Spectrum Management

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**Radio Regulations Overview**

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## Role of RR on Spectrum Management

Constitution/Convention	• Rights and obligations
RR (Radio Regulations) AR 5, 7- 14 AP 4, 5, 7 AP 25,26,27,30,30A,30B RS 1,4,33,42,49, 51,55, 59, 77, 84, ...	• Coordination, obtaining agreement, plan modification, notification
Regional Agreements	• Examination, recording status, recognition
ITU-R Recommendations	• Examination, recording status, recognition
Rules of procedure	• Examination, recording status, recognition
Special Agreements	• Harmful interference
Involvement of other organizations	• Assistance



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### Radio Regulations Overview

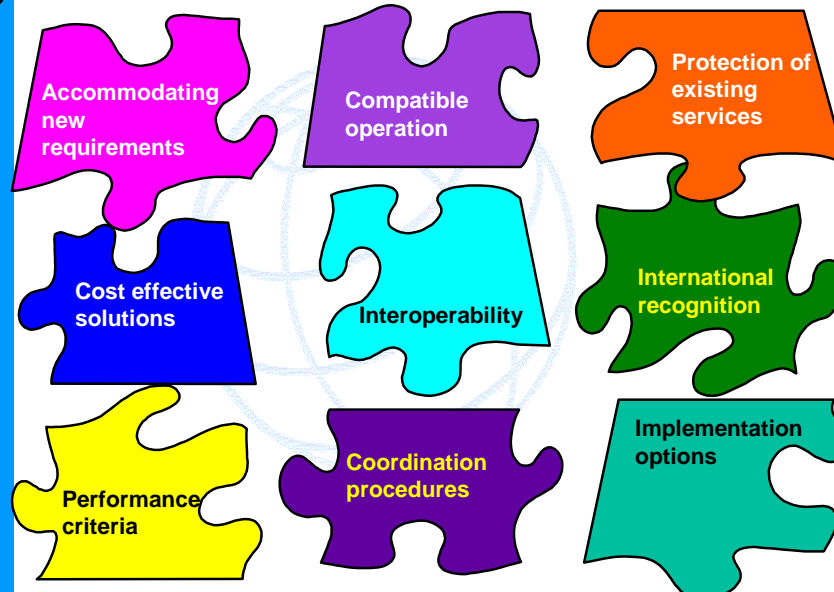
- Regulation varies from service to service
  - General provisions applicable to all services
  - Provisions applicable specifically to the fixed and the land mobile services
  - Maritime mobile and the aeronautical mobile services subject to very detailed international regulations
    - Involves broad international use of equipment and practices
    - Implies need to handle relevant operational procedures and technical material in a larger international context



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## Role of RR on Spectrum Management

### Objectives and how to achieve them





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### How to assign a frequency ?

- Frequency within band allocated to concerned service?
- Any mandatory RR provisions (power limits, channeling arrangement)? Are they met?
- Subject to a Plan? Need for applying plan-modification procedure?
- Subject to coordination? Mandatory (RR) or voluntary (Spec. Agreement)?
- Need for notification? What and when? In conformity with a Plan?

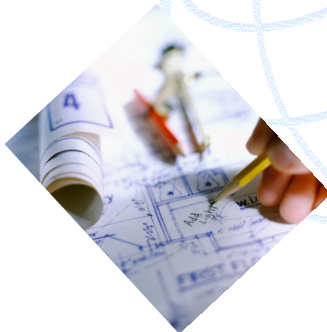



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## Role of RR on Spectrum Management




### Planning the frequency bands




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## Planning the frequency bands

- Worldwide plans (terrestrial services)
  - Frequency allotment plan for aeronautical mobile (OR) service - exclusive bands  
3 025 - 18 030 kHz (Appendix 26 to RR)
  - Frequency allotment plan for coast radiotelephone stations - exclusive maritime mobile bands  
4 000 - 27 500 kHz (Appendix 25 to RR)
  - Frequency allotment plan for aeronautical mobile (R) service - exclusive bands  
2 850 - 22 000 kHz (Appendix 27 to RR).

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## Planning the frequency bands

- Regional/subregional (Agreements concluded under the auspices of ITU)
  - BS: ST61, GE84, GE89, GE06
  - LF/MF BS: GE75
  - Maritime/aeronautical: GE85M, GE85N
- Plan modification procedures (all except AP 27)
- Seasonal planning HFBC: ART 12
- Other (outside ITU): ICAO, IALA

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**Notification and registration**

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## Role of RR on Spectrum Management

### Notification procedures (Art 11)

- MIFR: reference data on all frequency usage, frequencies that have international implications
- How to notify: App 4
  - Individual (all BC/BT, all those that are subject to plans, many of those in shared bands)
  - Typical
- When:
  - normally 3 months prior bringing into use
  - 3 years for assignments in shared bands and for HAPS in 2 GHz (base stations for IMT)
  - 5 years for assignments to HAPS in FX.



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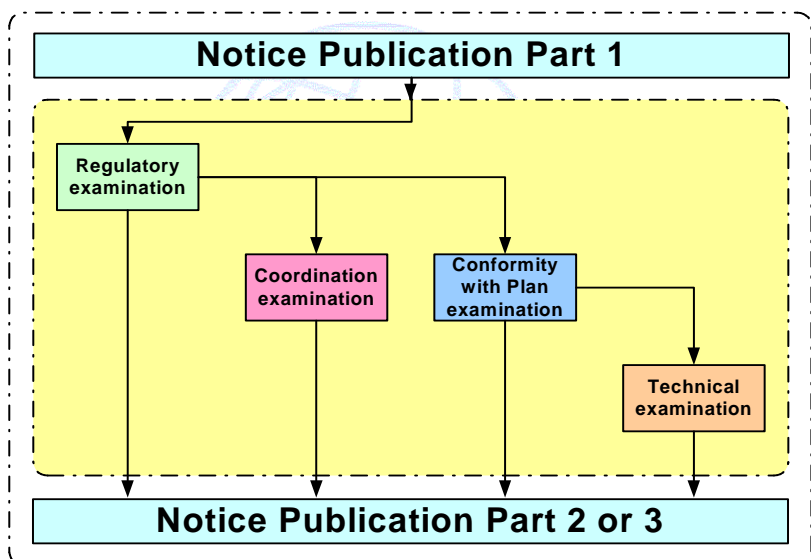
## Notification procedures (Art 11)

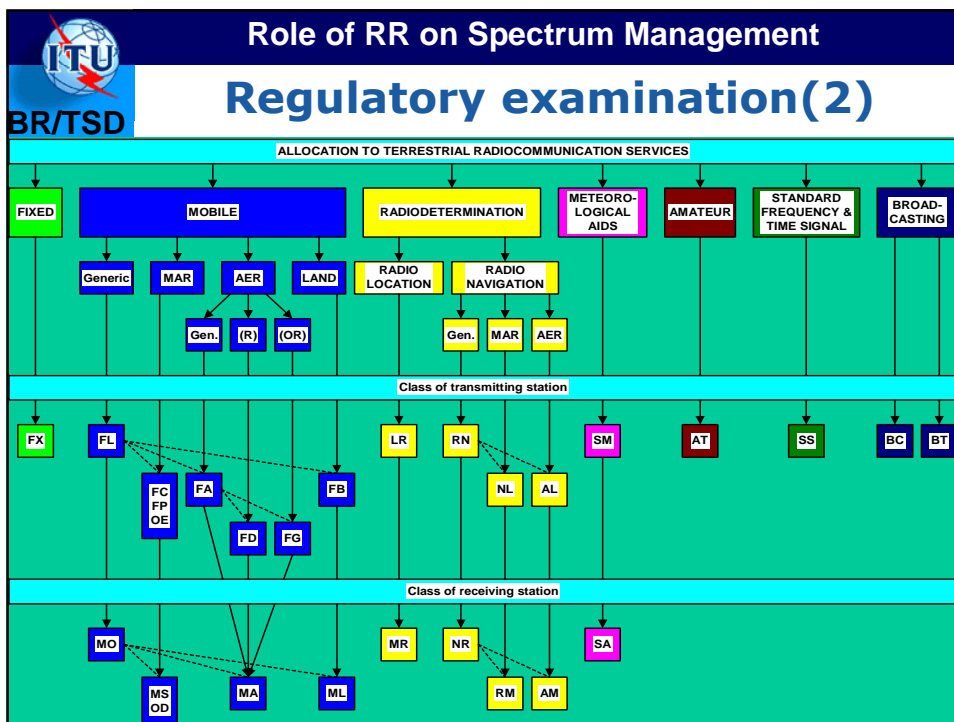
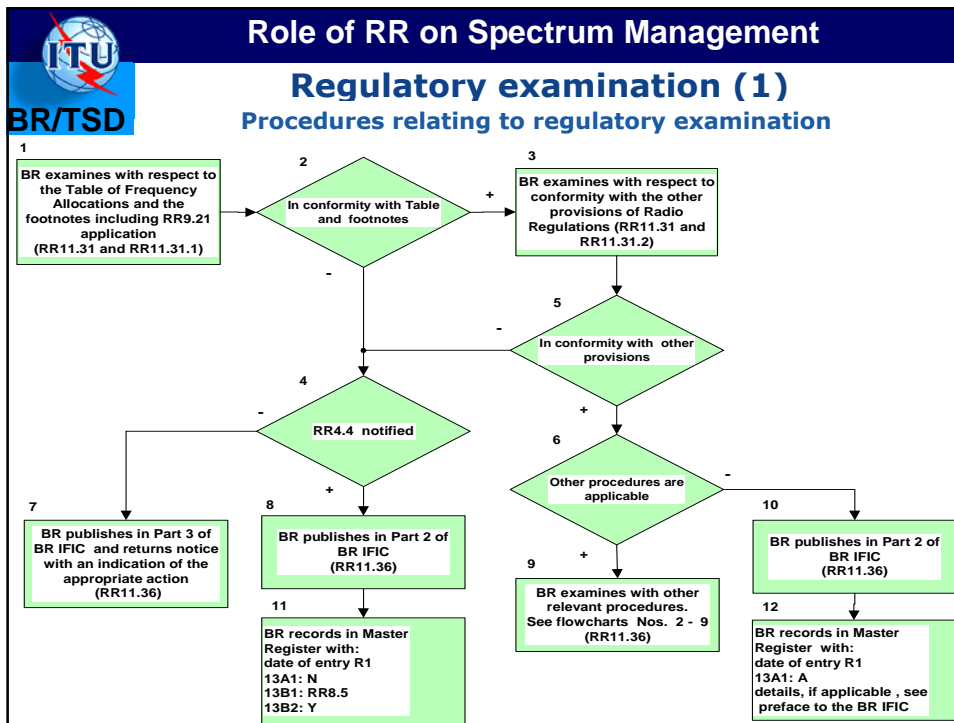
- What should be notified: all frequency assignments that may have international implications, except:
  - Common frequencies (distress and calling, GMDSS, SAR,...)
  - Frequencies to mobile stations
  - Frequencies to amateur stations
  - Frequencies to receiving stations, if the mode of operation is a single-frequency (simplex)
  - Frequencies to HFBC, when governed by Art 12
- Publication (BR IFIC), examination (11.31, 11.32, 11.34) → recording in the MIFR (status) or return to administration
- Submission for other purposes (service publications)



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## Notification procedures (Art 11)





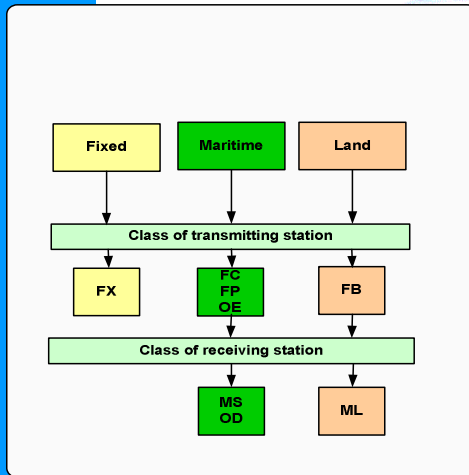




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## Role of RR on Spectrum Management

### Regulatory examination (3)



Allocation to services		
Region 1	Region 2	Region 3
24 000-24 890 kHz	FIXED LAND MOBILE	
25 210-25 550 kHz	FIXED MOBILE except aeronautical mobile	



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### Regulatory examination (4)

- Successful application of RR 9.21 if coordination is required in a footnote to the Table of Frequency Allocations reference to RR 9.21. (e.g. 5.293 and 5.323)
- Out-of band emission
- Overlapping emissions
- Receiving point of a terrestrial service is in a geographical area where service is not allocated
- Categories of service



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### Regulatory examination (5)

Allocation to services		
Region 1	Region 2	Region 3
322-328.6 MHz	FIXED MOBILE RADIO ASTRONOMY 5.149	
<b>Example 1:</b>		<b>Example 2:</b>
<b>Class of station FX</b>		<b>Class of station FX</b>
<b>Assigned frequency 330.0 MHz</b>		<b>Assigned frequency 328.0 MHz</b>
<b>Bandwidth 3 MHz</b>		<b>Bandwidth 3 MHz</b>
328.6-335.4 MHz	AERONAUTICAL RADIONAVIGATION	5.258 5.259



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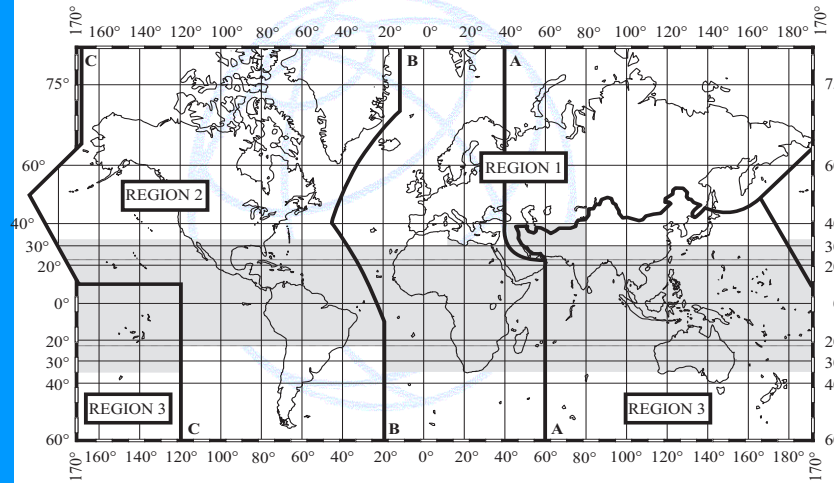
## Role of RR on Spectrum Management

### Regulatory examination (6)

- Priority of BS in tropical broadcasting bands
- Tropical broadcasting bands
  - ✓ 2 300 - 2 498 kHz (Region 1)
  - ✓ 2 300 - 2 495 kHz (Regions 2 and 3)
  - ✓ 3 200 - 3 400 kHz (all Regions)
  - ✓ 4 750 - 4 995 kHz (all Regions)
  - ✓ 5 005 - 5 060 kHz (all Regions)

## Regulatory examination (7)

### Tropical zones



5-01

## Regulatory examination (8)

- Conformity with other provisions of RR
  - Fixed service
  - Aeronautical mobile service
  - Maritime mobile service
  - Terrestrial stations operating in bands shared with equal rights with space services



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### Regulatory examination (9)

- Fixed Service
  - ✓ Bands < 30 MHz, classes of emission F3E and G3E prohibited
- Aeronautical mobile service
  - ✓ Distinction between route (R) and off-route (OR) services
  - ✓ Worldwide frequency allotment plans:
    - ✓ Aeronautical mobile (OR) service  
3025 – 18030 kHz (AP26)
    - ✓ Aeronautical mobile (R) service  
2850 – 22000 kHz (AP27)



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### Regulatory examination (10)

- Maritime mobile service (MMS)
  - ✓ Very detailed international regulations
  - ✓ Some MMS bands below 28 MHz - allocated on an exclusive basis
  - ✓ Art 51 Conditions to be observed in the maritime service
  - ✓ Art 52 Special rules relating to the use of frequencies
  - ✓ App 17 Frequencies and channelling arrangements in HF bands for MMS



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### Regulatory examination (11)

- Maritime mobile service (MMS)
  - ✓ ITU-R Rec M.1173, M.476-5, M.625-3, M.627-1, M.257-3
  - ✓ MMS in 4000 - 27500 kHz
  - ✓ Sub-divisions of exclusive frequency bands at 4, 6, 8, 12, 16, 18/19, 22 and 25/26 MHz
    - Channels used by ship stations (MS) and coast stations (FC) placed at opposite ends of each band
    - Facilitates duplex operation of radiotelephone equipment onboard ships



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## Role of RR on Spectrum Management

### Regulatory examination (12)

- ✓ Sub-divisions of exclusive frequency bands at 4, 6, 8, 12, 16, 18/19, 22 and 25/26 MHz
  - Similar frequency separation for NBDP (narrow-band direct printing) telegraph systems between coast and ship stations
    - transmitting frequencies (used in pairs)
  - Sub-bands elaborately planned for maximum use of available spectrum



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## Role of RR on Spectrum Management

### Regulatory examination (14)

- Terrestrial stations operating in shared bands (equal rights) with space services and allocated to space services - Earth-to-space
  - ✓ Power limits specified in Art 21(Earth-to-space and space-to-space)
  - ✓ Limits given in Nos. 21.3, 21.4, 21.5 and 21.5A apply, where applicable, to services and bands indicated in Table 21-2



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**Thank you**

david.botha@itu.int  
V.452  
+22 41 22 730 5548