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30<sup>TH</sup> WORLD RADIOCOMMUNICATION SEMINAR

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# Cross-border coordination issues for fixed and mobile services

ITU BR/TSD

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#ITUWRS



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# 1. General aspects of coordination (1)

## ➤ Goals of frequency coordination

- ✓ To ensure interference-free operation in border areas
- ✓ To assist in long-term planning of frequencies
- ✓ To promote efficient spectrum utilization
- ✓ To help to resolve interference between neighboring countries

## ➤ Parameters for coordination are defined in Nos. 1.166 - 1.176 of the Radio Regulations (RR), e.g.

### ✓ Interference

- Permissible interference, Accepted interference, Harmful interference

### ✓ Coordination

- Coordination distance, Coordination contour, Coordination area

# 1. General aspects of coordination (2)

**Interference: Permissible interference, Accepted interference, Harmful interference**

**1.166 interference:** The effect of unwanted energy due to one or a combination of *emissions, radiations, or inductions* upon reception in a *radiocommunication system*, manifested by any **performance degradation**, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

**1.167 permissible interference:** Observed or predicted interference which complies with quantitative interference and **sharing criteria** contained in these Regulations or in ITU-R Recommendations or in special agreements as provided for in these Regulations.

**1.168 accepted interference:** Interference at a **higher level** than that defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations.

**1.169 harmful interference:** Interference which **endangers the functioning** of a radionavigation service or of other safety services or **seriously degrades**, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations (CS).



# 1. General aspects of coordination (3)

## ➤ Methods to facilitate frequency sharing

Freq. separation	Spatial separation	Time separation	Signal separation*
<b>Channelling plans</b> Band segmentation Frequency division multiple access (FDMA) Control of emission characteristics	Geographical site separation Space diversity <b>Antenna characteristics:</b> - polarization/ pattern discrimination Physical barriers and site shielding	Time division multiple access (TDMA) <b>Duty cycle control</b> Dynamic real-time frequency assignment Etc.	Coded modulation: e.g. CDMA system Interference <b>power/bandwidth adjustments</b> - Power control - Low power, SRD <b>Adaptive signal processing:</b> e.g. SDR

\*These techniques may also be applied together with the technologies of former separations. [See Rec. ITU-R SM.1132](#)

# 1. General aspects of coordination (4)

## ➤ Initiation

- ✓ On planning stage
  - based on calculated values
- ✓ On operating stage
  - based on measured values

## ➤ Steps of coordination

- ✓ Identification of potentially affected countries
  - using agreed characteristics and the worst-case assumption
- ✓ Coordination
  - using real parameters, environmental data including terrain elevation data and agreed methods

# 1. General aspects of coordination (5)

Mandatory or Voluntary	Mandatory coordination	Voluntary coordination
Criteria	Coordination <b>shall</b> be effected before notification among administrations identified with <b>defined</b> criteria	Coordination <b>can/may</b> be effected among concerned administrations with <b>agreed</b> criteria
Basis	Coordination is mandated by: - Article 9 (Nos. 9.16, 9.18, 9.19), No. 5.457 - Worldwide Plan (e.g. Appendix 25) - Regional Plans (e.g. GE85-EMA, GE06) - Res. 150 (WRC-12), resolves 4 and 8 of Res. 168 (WRC-19), Res. 612 (Rev.WRC-12)	Coordination is established among concerned administrations in accordance with Article 6 (Special Agreements), e.g. cellular networks
Examination	BR examines with respect to: - No. 11.32 (for assignments under Nos. 9.16, 9.18, 9.19, other provisions or Resolutions in the RR)	BR does not take the voluntary coordination information into account in its examination process
When	Prior to the notification for recording in the MIFR	Any time agreed among concerned administrations



# 1. General aspects of coordination (6)

## ➤ Coordination criteria (coordination trigger) is given in a form of

- ✓ Coordination criteria (I/N) (e.g. I/N = 6 dB for mobile service)
- ✓ Permissible field strength (E) (e.g. E = 25 dB $\mu$ V/m in GE06)
- ✓ Permissible power-flux density (pfd) (e.g. pfd = -154.5 dB(W/(m<sup>2</sup>.4 kHz)) in No. **5.431B**)
- ✓ Distance separation (e.g. d=175 km in Res. **749 (Rev.WRC-19)** and **760 (Rev.WRC-19)**; 1200 km in RoP on No. **9.19**)
- ✓ Coordination contour/area (e.g. earth station coordination contour, Non-planned BSS service area)

## ➤ The conversion among the form of the criteria (E, I and pfd) is possible referring to Recommendation ITU-R P.525

## ➤ Coordination point

- ✓ At the border (e.g. with respect Non-planned BSS area)
- ✓ At a station (e.g. FSS earth station in Appendix 7)

## 2. Mandatory coordination (1)

### ➤ Coordination criteria (Appendix 5)

Reference of Article 9	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Remarks
No. 9.16 Terrestrial	Frequency bands for which a footnote refers to No. 9.11A	Transmitting terrestrial station is situated <b>within the coordination area</b> of a receiving earth station of <b>Non-GSO</b>	The coordination area of the affected earth station has already been determined using the calculation method of <b>Appendix 7</b>
No. 9.18 Terrestrial	Any frequency band allocated to a space service	Transmitting terrestrial station is situated <b>within the coordination area</b> of a receiving earth station of <b>GSO</b>	The coordination area of the affected earth station has already been determined using the calculation method of No. 9.17 ( <b>Appendix 7</b> )

## 2. Mandatory coordination (2)

### ➤ Coordination criteria (Appendix 5)

Reference of Article 9	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Remarks
No. 9.19 Terrestrial	11.7-12.7 GHz (see Article 6 of Appendix 30) 12.5-12.75 GHz (terrestrial services in Nos. 5.494 and 5.496 as well as in Regions 2 and 3 in respect of BSS allocation in Region 3) 17.7-17.8 GHz (terrestrial services in all three Regions in respect of BSS allocation in Region 2)	i) Necessary bandwidths overlap; and ii) the power flux-density (pfd) of the interfering station at the edge of the BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths (See also Article 6 of Appendix 30)

## 2. Mandatory coordination (3)

### ➤ Coordination criteria (Appendix 5)

Reference of Article 9	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Remarks
No. 9.19 Terrestrial	1 452-1 492 MHz 2 310-2 360 MHz (terrestrial services in all three Regions in respect of BSS allocation in No. 5.393) 2 520-2 670 MHz (see No. 5.416) 40.5-42.5 GHz 74-76 GHz	i) Necessary bandwidths overlap; and ii) the power flux-density (pfd) of the interfering station at the edge of the BSS service area exceeds the permissible level or a distance of 1200 km from the station to the border of other countries	Check by using the assigned frequencies and bandwidths (See also RoP on No. 9.19)

## 2. Mandatory coordination (4)

- Coordination criteria under other provisions

## 2.1 Coordination under Nos. 9.16 & 9.18 (1)

### ➤ Procedures of coordination under Nos. 9.16 and 9.18

- ✓ **9.16 k)** for a transmitting station of a terrestrial service for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. **9.11A** and which is located within the **coordination area** of an earth station in a **non-geostationary-satellite** network;
- ✓ **9.18 n)** for any transmitting station of a terrestrial service in the bands referred to in No. **9.17** (**above 100MHz** allocated with equal rights to space and terrestrial services) **within the coordination area of an earth station**, in respect of this earth station, with the exception of the coordination under Nos. **9.16** and **9.19**;



## 2.1 Coordination under Nos. 9.16 & 9.18 (2)

### ➤ Example 1 (1)

BR ID: [122047266](#)

Administration: BEL

Administration's unique ID: 04160001

Fragment: NTFD\_RR

Provision: RR11.2

Notice type: T11 / ADD

Mod type: NOT MODIFY

Date Rcv: 28 Apr 2022

Date In Use: 12 Feb 2022

Stage: FINAL PUB

Publication history: [NTFD\\_RR/1/2971](#), [NTFD\\_RR/3/2982](#)

Assigned frequency: 4160 MHz

Bandwidth: 40M0

Examination category: SBD

Class of station: FX

Geographic area: BEL

Site name: SERAING BIPT 3221

Coordinates: 5°33'8"E - 50°34'43"N

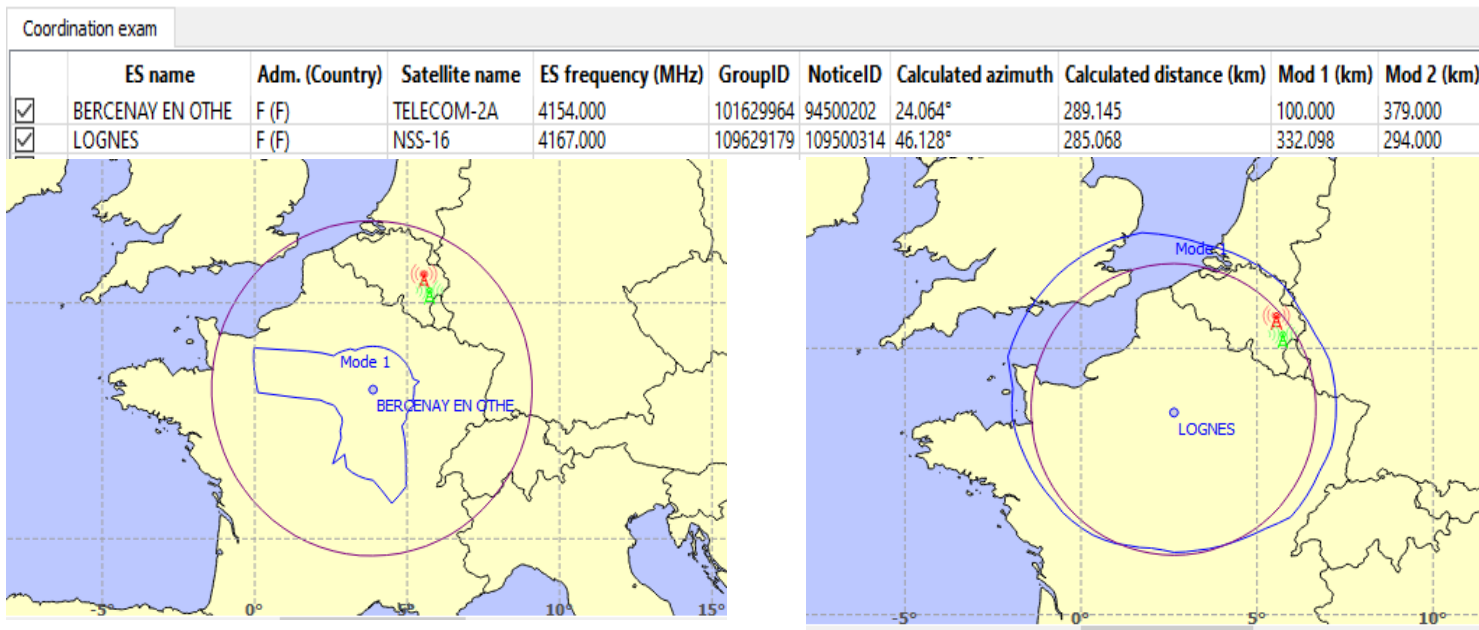
Coordinates: 5.5522° ; 50.5786°

Administration of F was identified as affected.

✓ **2 earth stations of F**

# 2.1 Coordination under Nos. 9.16 & 9.18 (3)

## ➤ Example 1 (2)





## 2.1 Coordination under Nos. 9.16 & 9.18 (4)

### ➤ Example 2

**BR ID:** [122046130](#)

**Administration:** AZE

**Administration's unique ID:** FX0837-2021

**Fragment:** NTFD\_RR

**Provision:** RR11.2

**Notice type:** T11 / ADD

**Mod type:** NOT MODIFY

**Date Rcv:** 13 Apr 2022

**Date of entry:** 13 Apr 2022

**Date In Use:** 16 Jan 2021

**Stage:** FINAL PUB

**Publication history:** NTFD\_RR/1/2970, NTFD\_RR/2/2982

**Assigned frequency:** 7268.5 MHz

**Bandwidth:** 7M00

**Examination category:** SBD

**Class of station:** FX

**Geographic area:** AZE

**Site name:** Duz Rasullu

**Coordinates:** 45°27'29"E - 40°39'9"N

**Coordinates:** 45.4581° ; 40.6525°

➤ No earth station was identified as affected

## 2.2 Coordination under No. 9.19 (1)

### ➤ Procedures of coordination under No. 9.19

- ✓ **9.19 o)** for any transmitting station of a terrestrial service or any transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band **shared on an equal primary basis with the broadcasting-satellite service**, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service.



## 2.2 Coordination under No. 9.19 (2)

### ➤ Rules of Procedure 9.19

- ✓ For transmitting IMT stations notified with nature of service “**IM**” in the frequency band **1 452-1 492 MHz**, in Regions 1 and 3: frequency overlap and the power flux-density of  **$-154 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$**  **at the edge of the service area of non-planned BSS**, is calculated using **Recommendation ITU-R P.452-16 for 20 % of time;**
- ✓ For **non-IMT stations in the frequency band 1 452-1 492 MHz**, as well as **all transmitting terrestrial stations in other non-planned BSS frequency bands**: frequency overlap and the distance from the location of the terrestrial station to the national border of any country included in the service area of the BSS assignment is **less than 1 200 km.**

## 2.2 Coordination under No. 9.19 (3)

### ➤ Example 1

**BR ID:** [122035648](#)

**Administration:** F

**Administration's unique ID:** 1157973

**Fragment:** NTFD\_RR

**Provision:** RR11.2

**Notice type:** T11 / ADD

**Mod type:** NOT MODIFY

**Date Rcv:** 08 Mar 2022

**Date In Use:** 08 Oct 2021

**Stage:** FINAL PUB

**Publication history:** NTFD\_RR/1/2968,  
NTFD\_RR/3/2982

**Assigned frequency:** 73.875 GHz

**Bandwidth:** 500M

**Examination category:** SBD

**Class of station:** FX

**Geographic area:** F

**Site name:** ESCAUTPONT BRUNCHAUT2

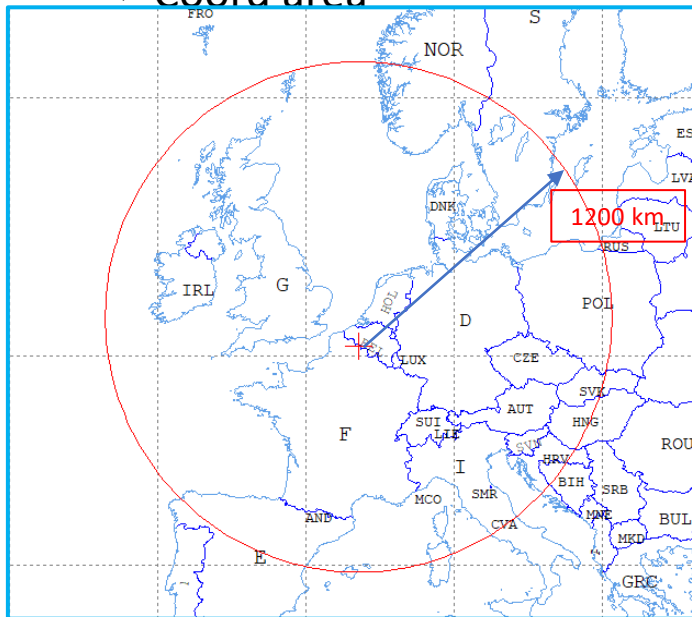
**Coordinates:** 3°33'15"E - 50°24'56"N

**Coordinates:** 3.5542° ; 50.4156°

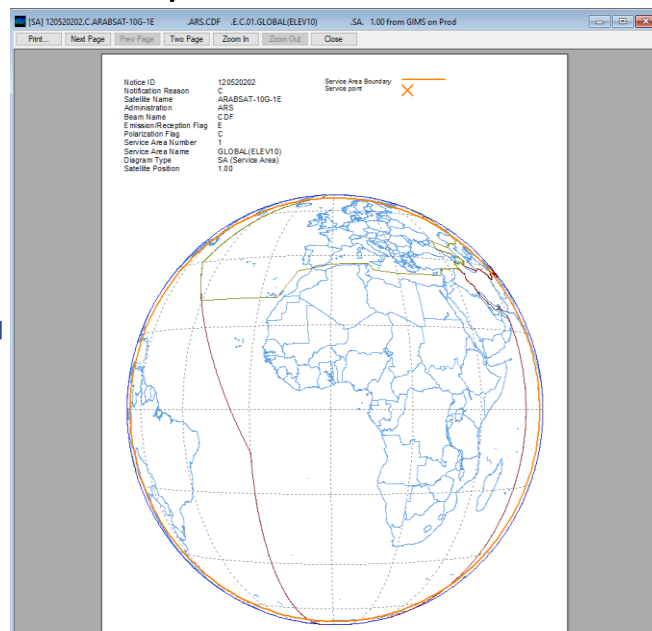
## 2.2 Coordination under No. 9.19 (4)

### ➤ Example 1

✓ Coord area



### Service area of ARS/ARABSAT-10G-1E



Included in  
the service

area:

AND, AUT  
BEL, BIH  
CVA, CZE  
D, DNK  
E, G  
HNG, HOL  
HRV, I  
IRL, LIE  
LUX, MCO  
NOR, POL  
RUS, S  
SMR, SUI  
SVK, SVN

## 2.2 Coordination under No. 9.19 (5)

### ➤ Example 1

More than 100 satellite networks involved

Unfavorable examination results in NBSS bands							
Terrestrial BR ID	Adm	NBSS sat name	NBSS assigned freq	NBSS bandwidth	NBSS notice id	NBSS group id	Affected service areas
122035648	ARS	ARABSAT-10G-1E	74250	500	120520202	120739613	AND/874.754 AUT/542.857 BEL/8.321 BIH/1074.589 CVA/1148.058 CZE/605.578 D/176.324 DNK/606.719 E/865.758 G/173.048 HNG/985.493 HOL/91.300 HRV/922.665 I/561.545 IRL/715.362 LIE/559.723 LUX/165.933 MCO/794.501 NOR/873.406 POL/779.308 RUS/1175.675 S/831.226 SMR/981.129 SUI/411.915 SVK/985.390 SVN/857.877

## 2.2 Coordination under No. 9.19 (6)

### ➤ Example 2

**BR ID:** [115153219](#)

**Administration:** CAN

**Administration's unique ID:** FX000000010

**Fragment:** NTFD\_RR

**Provision:** RR11.2

**Notice type:** T11

**Date Rcv:** 16 Dec 2015

**Assigned frequency:** 2311 MHz

**Bandwidth:** 5M00

**Examination category:** NBSS

**Class of station:** FX

**Geographic area:** CAN

**Site name:** GRAND BEACH MB

**Coordinates:** 96°34'42"W - 50°36'19"N

### ➤ Non-Planned BSS exam is applicable.

- Used coordination distance: 1200 km.
- **No NBSS networks** found, which require coordination within a range of 1200 km.

## 2.3 Coordination under other provisions (1)

### ➤ Mandatory coordination required by Worldwide Plans

- ✓ (for example, App 25). The procedures to be followed in these cases are explicitly explained in the corresponding Plans.

### ➤ Mandatory coordination required by Regional Plans

- ✓ (for example, GE06). The procedures to be followed in these cases are explicitly explained in the corresponding Plans.

### ➤ Coordination required by some WRC Resolutions

- ✓ e.g. Resolution 612 (Rev.WRC-12)



## 2.3 Coordination under other provisions (2)

### ➤ Coordination criteria (Res. 612 (Rev.WRC-12))

Reference	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition
No. 5.132A	4 438-4 488 kHz	<i>resolves 6 of Resolution 612 (Rev. WRC-12)</i>
No. 5.145A	5 250-5 275 kHz	
No. 5.161A	9 305-9 355 kHz (R1, R3)	
Res. 612 (Rev. WRC-12)	13 450-13 550 kHz	
	16 100-16 200 kHz	
	24 450-24 600 kHz (R1, R3)	
	24 450-24 650 kHz (R2)	
	26 200-26 350 kHz (R1, R3)	
	26 200-26 420 kHz (R2)	
	39-39.5 MHz (R1)	
	39.5-40 MHz (R3)	
	41.015-41.665, 43.35-44 MHz (No. 5.161A)	
	42-42.5 MHz (R1)	

## 2.3 Coordination under other provisions (3)

### ➤ Coordination criteria (Res. 612 – *resolves 6*)

Frequency (MHz)	Land path (km)		Sea or mixed path (km)	
	Rural	Quiet rural	Rural	Quiet rural
5 ( $\pm 1$ MHz)	120	170	790	920
9 ( $\pm 1$ MHz)	100	130	590	670
13 ( $\pm 1$ MHz)	100	110	480	520
16 ( $\pm 1$ MHz)	80	100	390	450
25 ( $\pm 3$ MHz)	80	100	280	320
42 ( $\pm 3$ MHz)	80	100	200	230

✓ RoP on **5.312A**, **5.145A** and **5.161A**:

- As the Bureau has no means for the identification of rural or quiet rural areas, the Board decided that for examination of the notified frequency assignment to a station in the radiolocation service from the view point of its conformity with *resolves 6* of Resolution **612** (Rev.WRC-12) the Bureau shall use the separation distances for quiet rural paths listed in Columns 3 and 5, as appropriate, of the Table of *resolves 6*.

## 2.3 Coordination under other provisions (4)

### ➤ Coordination criteria (Footnotes for HAPS)

Reference	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition
<b>No. 5.457</b> <b>Res. 150</b> <b>(WRC-12)</b>	6 440-6 520 MHz (HAPS-to-ground direction) and 6 560-6 640 MHz (ground-to-HAPS direction)	The use of HAPS gateway links in these bands requires explicit agreement with other administrations whose territories are located <b>within 1 000 km</b> from the border of an administration intending to use the HAPS gateway links.
<b>5.550D</b>	38-39.5 GHz	<i>resolves</i> 4 and 8 of Resolution <b>168 (WRC-19)</b>

## 2.4 Notification of coordination information

### ➤ How to notify the successful coordination information

✓ in TerRaNotice  
text file

<COORD>

t\_adm=B

t\_adm=GUY

t\_adm=SUR

t\_adm=TRD

t\_adm=VEN

</COORD>

# on TerRaNotice user  
interface

-Coordination successfully completed with the following administrations:

Available administrations

USA	▲
UZB	
VCT	
VTN	
VUT	▼

Add >

< Remove

<< Clear

Selected administrations

B	▲
GUY	
SUR	
TRD	
VEN	▼

# 3. Voluntary coordination (1)

## ➤ When to coordinate?

- ✓ Foreseen received interference > Permissible interference

## ➤ Initiation of the coordination

- ✓ planning
- ✓ operating

## ➤ General procedure

- ✓ 1st stage: Coordination between operators
- ✓ 2nd stage: Coordination between administrations
- ✓ 3rd stage: Coordination with BR's assistance

### 3. Voluntary coordination (2)

- Generic coordination criteria (e.g. IMT-2000 base station\*)

Item	Formular	1800 MHz band	900 MHz band
Bandwidth (B)		5 MHz	
Temperature (T)		290 K	
Boltzmann Coefficient (k)		$1.38 \times 10^{-23}$	
Noise temp. (No)	$=10 \log(kTB)$	-137 dBW	
Noise figure (Nf)		5 dB	
Protect. criteria (I/N)		-6 dB	
<b>Permissible interference (Ip)</b>	<b><math>= No+Nf+I/N</math></b>	<b>-138 dBW</b>	
Permissible field stren. (Ep)	$= Ip+20*\log(f)+77.2$	34.3 dB $\mu$ V/m	28.3 dB $\mu$ V/m

\*IMT-2000 receiving base station (UTRA FDD Macro) according to [ITU-R M.2039](#)

### 3. Voluntary coordination (3)

#### ➤ Coordination criteria (Footnotes for HAPS)

Reference	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition
No. 5.388B	2110-2170 MHz (Regions 1 and 3 countries listed in the footnote) 2110-2160 MHz (Region 2 countries listed in the footnote) HAPS-to-ground direction	HAPS operating as an IMT base station shall <b>not exceed</b> a co-channel <b>power flux-density of <math>-127</math> dB(W/(m<sup>2</sup> · MHz))</b> at the Earth's surface outside a country's borders <b><u>unless explicit agreement of the affected administration is provided.</u></b>

### 3. Voluntary coordination (4)

#### ➤ Coordination criteria (Resolutions for HAPS)

Footnote	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition
<b>5.388A</b>	2110-2170 (Regions 1 and 3) 2110-2160 (Region 2) HAPS-to-Ground	<i>resolves 1.1 and 1.3 of Resolution 221 (Rev.WRC-07)</i>
<b>5.530E</b>	21.4-22 GHz (Region 2) HAPS-to-Ground	<i>resolves 1 of Resolution 165 (WRC-19)</i>
<b>5.532AA</b>	24.25-25.25 GHz (Region 2) HAPS-to-Ground	<i>resolves 2 of Resolution 166 (WRC-19)</i>
<b>5.534A</b>	25.25-27 GHz (Ground-to-HAPS) 27-27.5 GHz (HAPS-to-Ground) (Region 2)	<i>resolves 1, 3, 4 and 10 of Resolution 166 (WRC-19)</i>
<b>5.543B</b>	31-31.3 GHz (HAPS-to-Ground)	<i>resolves 1 of Resolution 167 (WRC-19)</i>
<b>5.550D</b>	38-39.5 GHz	<i>resolves 1, 3, 5 and 6 of Resolution 168 (WRC-19)</i>
<b>5.552A</b>	47.2-47.5 GHz and 47.9-48.2 GHz HAPS-to-Ground	<i>resolves 3 and 4 of Resolution 122 (Rev. WRC-19)</i>



### 3. Voluntary coordination (5)

#### ➤ What to include in a special agreement?

- ✓ **Frequency range and frequency categories** defined when coordinating or planning (e.g. channeling arrangement)
- ✓ **Radiocommunication services and systems** concerned, e.g. fixed or mobile service
- ✓ **Permissible interference level**
  - Open called as **coordination triggering level**, e.g. Etrigger, pfd
  - Usually decided based on internationally, regionally, bi-directionally **agreed documents** (RR, ITU-R Recommendations, regional standard documents)
- ✓ **Propagation model and interference calculation method** (to be used in the planning stage), e.g. ITU-R P.1546, ITU-R P.452, etc. agreed between the countries concerned

# 3. Voluntary coordination (6)

## ➤ What to include in a special agreement?

- ✓ Coordination **procedure method** (preferential frequencies, channeling separations, protection at the border, protection of specific stations)
- ✓ **Exchange of** appropriate spectrum management **information**
- ✓ **Measurement method** (to be used in the operation stage)
- ✓ A means of resolving instances of **unexpected harmful interference**
  - Contact points in Administrations
  - Contact points in Operators
  - Time limit for reporting/resolving the instances
- ✓ Others agreed

## 4. Concluding remarks

- The radio **signal spillover** is unavoidable.
- **Mandatory** (Article 9, Plans, Resolutions or Article 5) or **Voluntary** (Article 6 special agreement applies) coordination are required.
- The best solution is to **have an agreement on channeling arrangement** between the administrations concerned.
- For frequencies not having channeling arrangements the practical solution is to coordinate between administrations taking into account **the agreed criteria and methods**.
- In accordance with No. 6.7 of Article 6 (special agreement) of Radio Regulations, if two or more Member States coordinate the use of individual frequencies in any of the frequency bands covered by Article 5, before notifying the frequency assignments concerned, **they shall in all appropriate cases inform the Bureau of such coordination**.

# References for voluntary coordination

- [Rules of Procedure, Part B4](#) – coordination distances for protection of FS/MS vs. FS/MS in the bands 9kHz-28000kHz
- [ITU-R Handbook on Guidance for bilateral/multilateral discussions on the use of frequency range 1 350 MHz – 43.5 GHz by fixed service systems](#)
- [Rec. ITU-R SM.1049](#) A method of spectrum management to be used for aiding frequency assignment for terrestrial services in border area
- [Rec. ITU-R SM.1132](#) General principles and methods for sharing between radiocommunication services or between radio stations
- [ERC/REC/\(01\)01](#) Cross-border coordination for mobile/fixed communications networks (MFCN) in the frequency bands: 1920-1980 MHz and 2110-2170 MHz
- [ECC/REC/\(11\)04](#) Cross-border Coordination for MFCN in the frequency band 790-862 MHz
- [ECC/REC/\(05\)08](#) Frequency planning and cross-border coordination between GSM Land Mobile Systems (GSM 900, GSM 1800 and GSM-R)
- [ECC/REC/\(08\)02](#) Cross-border coordination for MFCN in the frequency bands 900 MHz and 1800 MHz excluding GSM vs. GSM systems

# References for voluntary coordination

- [ECC/REC/\(11\)05](#) Cross-border Coordination for MFCN in the frequency band 2500-2690 MHz
- [ECC/REC/\(14\)04](#) Cross-border coordination for MFCN and between MFCN and other systems in the frequency band 2300-2400 MHz
- [ECC/REC/\(15\)01](#) Cross-border coordination for MFCN in the frequency bands: 694-790 MHz, 1452-1492 MHz, 3400-3600 MHz and 3600-3800 MHz
- [ECC/REC/\(16\)03](#) Cross-border coordination for BB-PPDR systems in the frequency band 698 to 791 MHz
- [ECC/REC/\(20\)03](#) Frame structures to facilitate cross-border coordination of TDD MFCN in the frequency band 3400-3800 MHz
- [T/R 25-0](#) Planning criteria and cross-border coordination of frequencies for land mobile systems in the range 29.7-470 MHz
- [HCM agreement 2020](#) – Co-ordination of frequencies between 29.7 MHz and 43.5 GHz for the fixed service and the land mobile service between 17 European administrations
- Arrangement to control cross border spillover and harmful interference in the mobile service between Saudi Arabia, Bahrain, United Arab Emirates, Iran (Islamic Republic of), Kuwait, Oman and Qatar (March 2013)

# Thank you!

ITU – Radiocommunication Bureau  
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