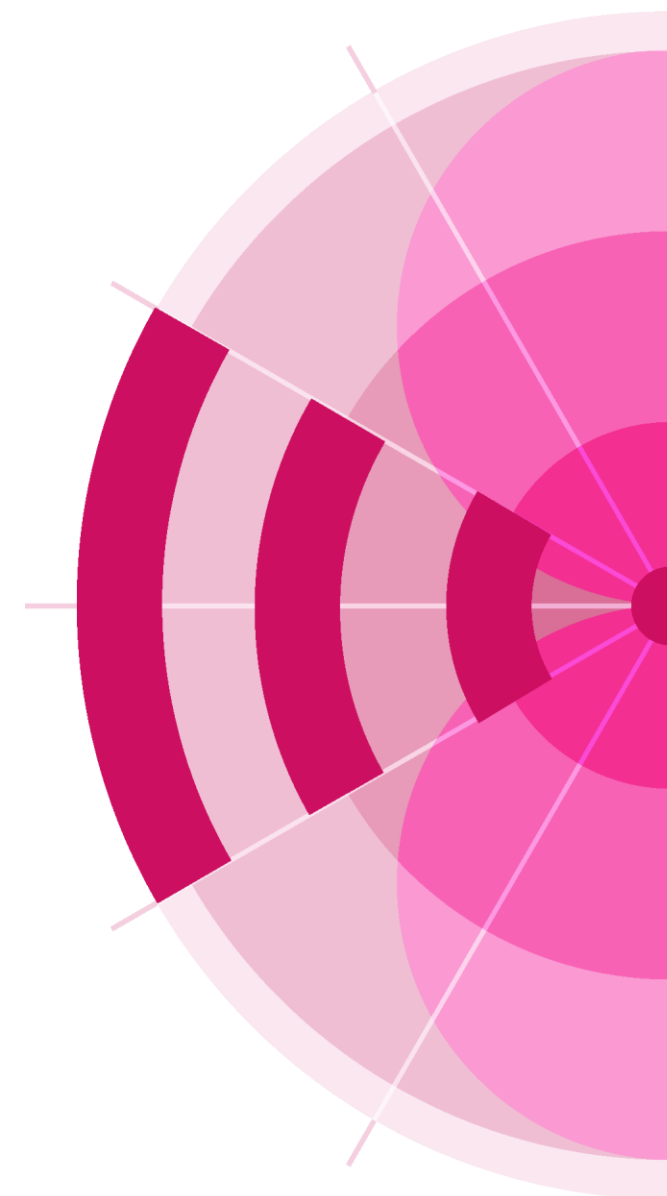


**ITUWRS**  
ONLINE2020

29<sup>TH</sup> WORLD RADIOCOMMUNICATION SEMINAR  
30 November - 11 December 2020

# Submission of Coordination Requests



**Ellie Xiuqi WANG**

*Head, Data Treatment Section of SPR*

Space Service Department, Radiocommunication Bureau  
International Telecommunication Union

[www.itu.int](http://www.itu.int) [BRmail@itu.int](mailto:BRmail@itu.int) [Xiuqi.Wang@itu.int](mailto:Xiuqi.Wang@itu.int)

[www.itu.int/go/wrs-20](http://www.itu.int/go/wrs-20)

#ITUWRS



# Contents



- **ITU Regulatory / Registration Procedures**  
(concerning **Receivability** for CRC including relevant **WRC implementation**)
- **Graphical Database**
- **Notice Database**
- **Useful / Free Info via ITU webpages**



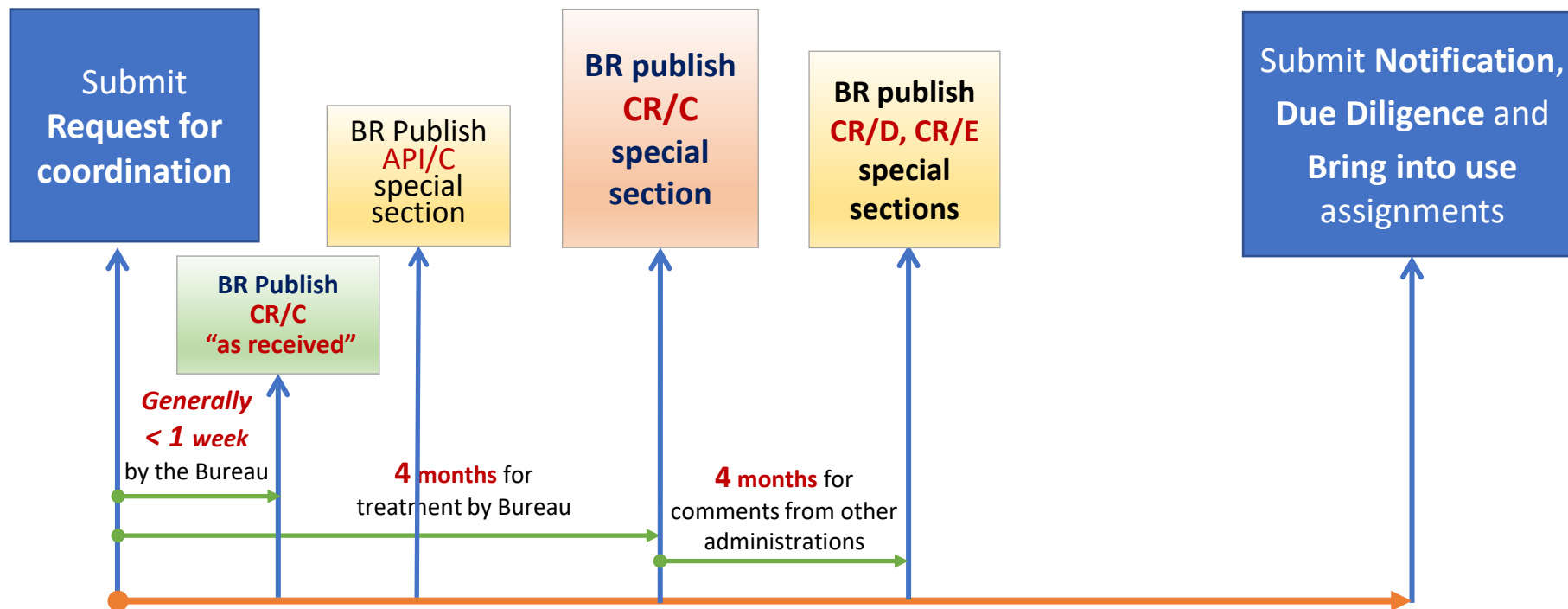
# First come, First served !

**What** should you do  
to make your notice for satellite networks  
**receivable**

**How** to obtain promptly  
a **formal date of receipt**  
for your satellite network



# ITU process for satellite networks subject to coordination



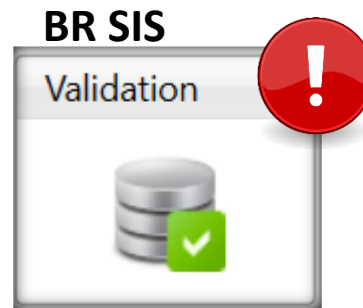
**MAXIMUM 7 YEARS !**

# Rules concerning Receivability

## Appendix 4



**Notice Database**



**Cross validation**

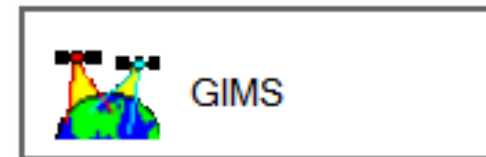


**Diagram Database**

Use the latest BR software V9.0



Check **completeness** and **correctness** to establish a formal date of receipt



CR/464 only GIMS mdb format shall be receivable under **RES 55** (WRC-19).

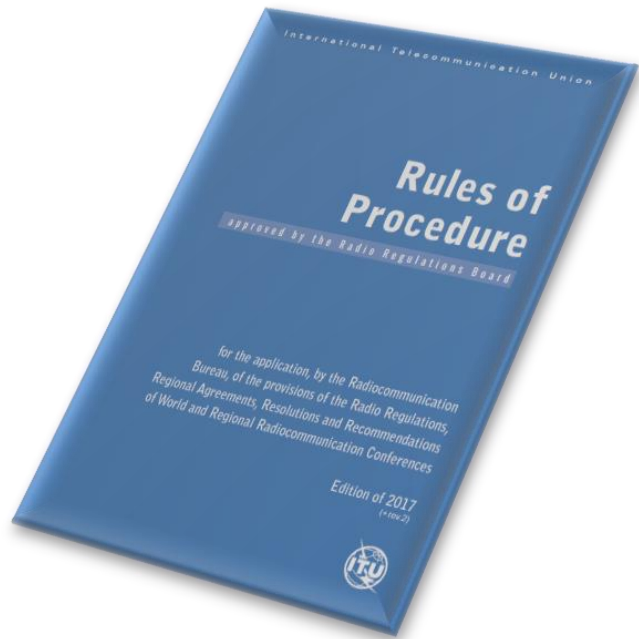


**ITUWRS**  
ONLINE2020

RoP (Edition of 2017 Rev.2); **RES 55**, **RES 908** (Rev.WRC-15); **CR/464**(2020)

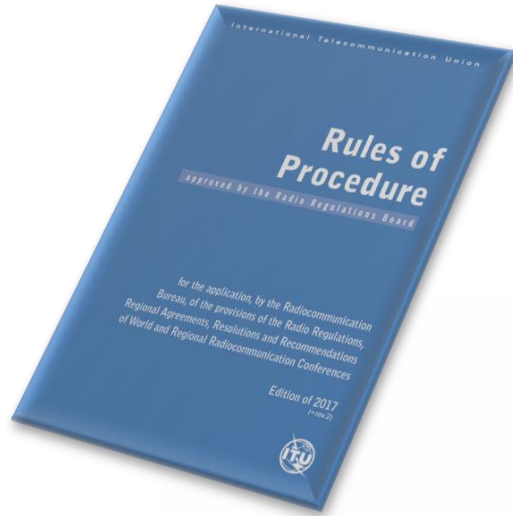


# Establishment of a formal date of receipt of info



- In order to establish a formal date of receipt for the purpose of treatment of the submissions, the Bureau shall examine inter alia the completeness and correctness of the information submitted by administrations.
- Where a notice received by the Bureau does not contain all of the mandatory information as defined in Annex 2 of Appendix 4 or appropriate reason for any omissions, the Bureau shall regard the notice as incomplete. The Bureau shall immediately inform the administration and seek the information not provided.
- Further processing of the notice by the Bureau will remain in abeyance and a formal date of receipt will not be established until the missing information is received. The formal date of receipt will be the date of receipt of the missing information.

# Rules concerning Receivability



**30 days to respond  
with complete info  
within the scope of Bureau's enquiry**



Part A1	Receivability	page 1	rev. 2
---------	---------------	--------	--------

**Rules concerning the Receivability of forms of notice generally applicable to all notified assignments submitted to the Radiocommunication Bureau in application of the Radio Regulatory Procedures\***

# Rules concerning Receivability

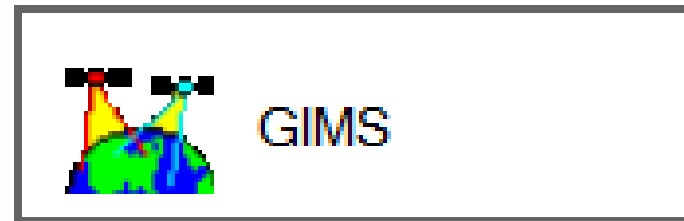
## Response

- **within the scope** of Bureau's enquiry – retain original date of receipt
  - **Not within** the scope of Bureau's enquiry - **new date** of receipt
  - when checking Receivability/completeness, the BR has not examined yet under No.11.31
- 
- Missing any mandatory information required under Appendix 4
    - will be returned to the Administration
  - Frequency bands subject to **AP30/30A/30B** procedures
    - will be returned to the Administration
  - Wrong format
    - will be returned to the Administration

**Withdrawal** within **15 days**  
possible  
without cost recovery fee



# Graphical Data / DIAGRAMS IN GIMS MDB



## Diagram Database

CR/464 (2020) only GIMS mdb format shall be receivable under **RES 55**.

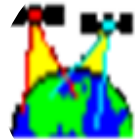


# Main Graphical Data for **CRC (GSO)** in Gims



GIMS

Antenna Gain Contour



GIMS

Service Area



GIMS

Antenna Gain towards GSO orbit  
(AG-GSO)

# Antenna Gain Contour

AP4 Annex 2 No. B.3.b.1

at least for -2, -4, -6, -10 and -20 dB and at 10 dB intervals thereafter, as necessary, relative to the maximum antenna gain, when any of these contours is located either totally or partially anywhere within the limit of visibility of the Earth from the given geostationary satellite

For steerable beam (No.1.191), if the effective boresight area is less than the global service area, the contours are the result of moving the boresight of the steerable beam around ... .. shall also include the 0 dB relative gain isoline

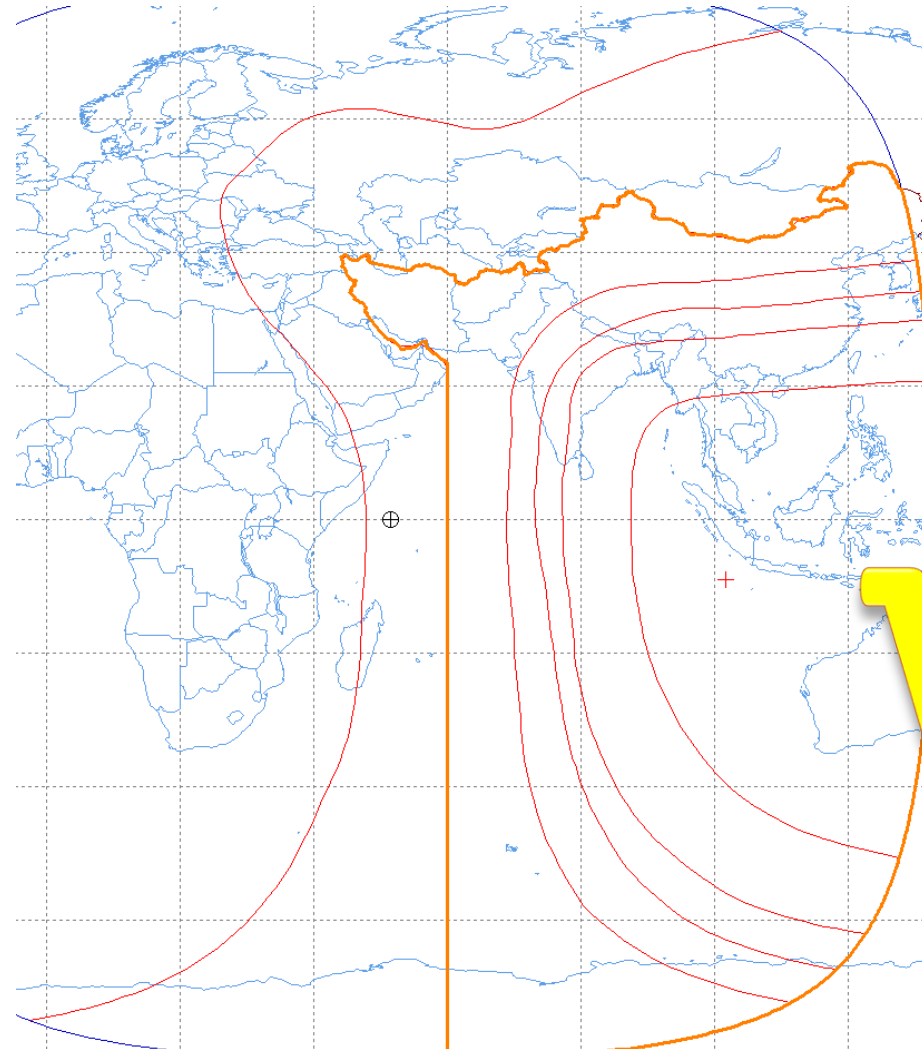
- For gain contours, please check manually.

# Antenna Gain Contour

AP4 Annex 2 No. B.3.b.1

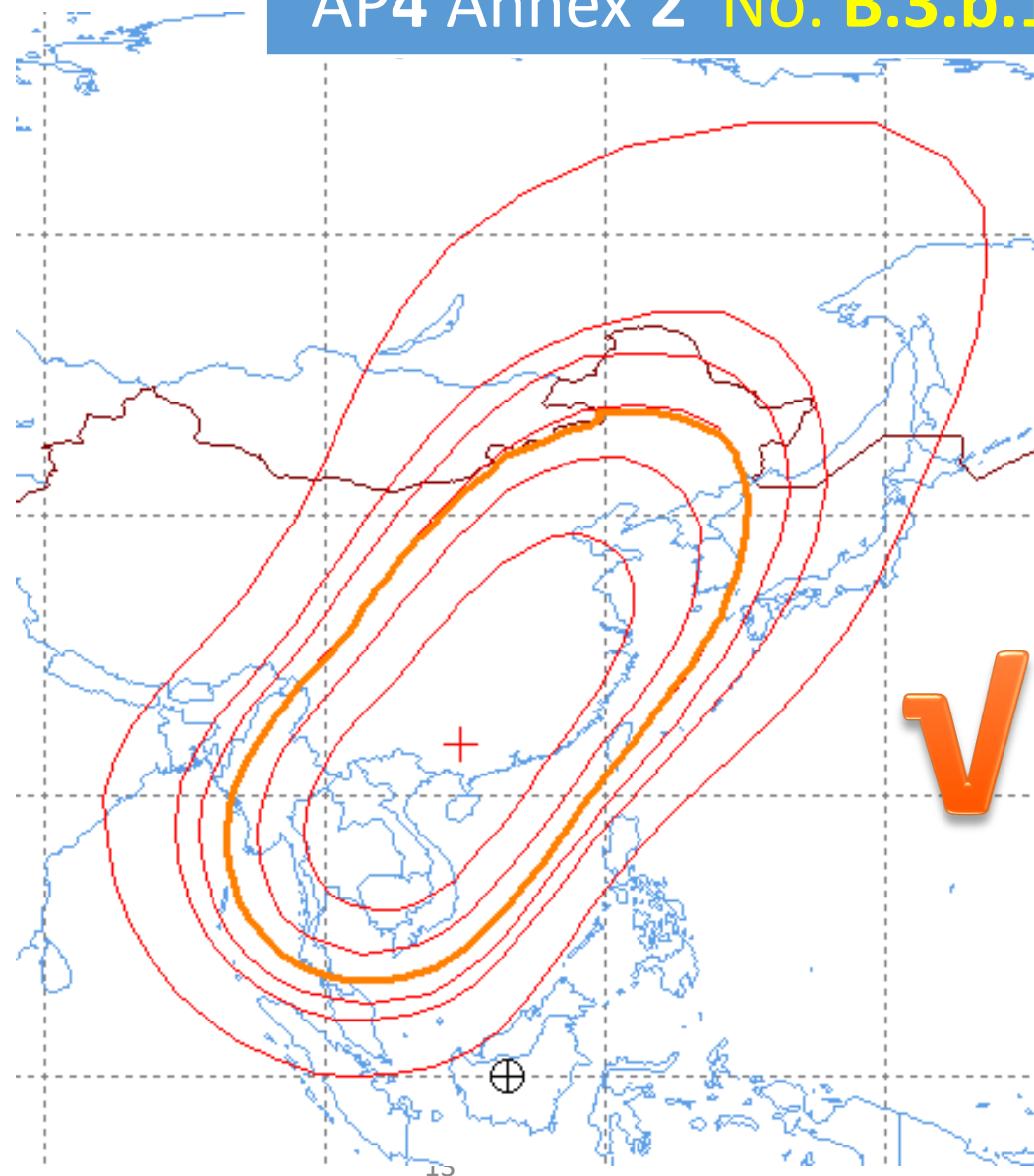
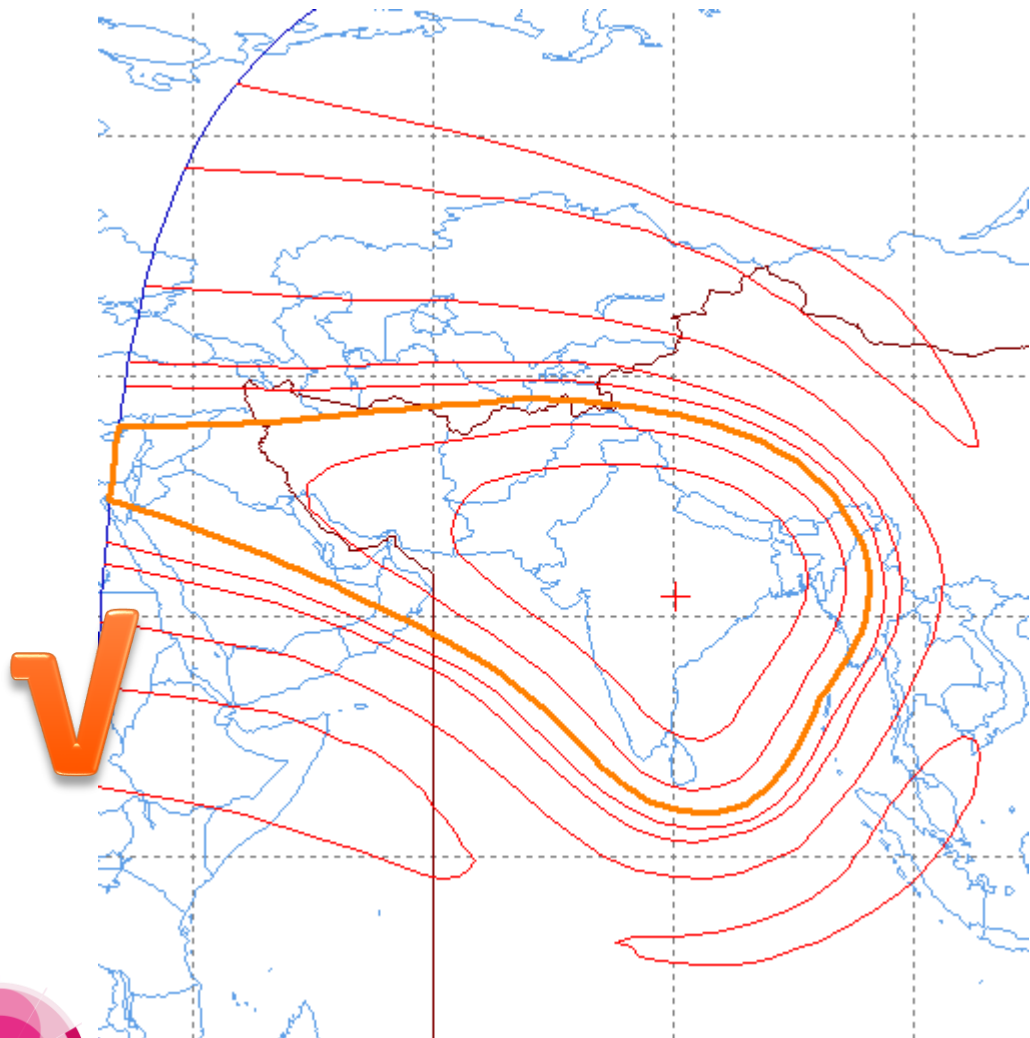
Note ---

*“administrations should, to the extent practicable, **align the areas** the satellite steerable beams could cover with the service area of their networks with due regard **to their service objectives.**”*



# Antenna Gain Contour

AP4 Annex 2 No. B.3.b.1



# Antenna Gain Contour

AP4 Annex 2 No. B.3.b.1

The Bureau would like to request that your Administration **consider providing revised effective gain contour diagrams** for these beams, **more closely aligned with the service area concerned**, which may result in reduced coordination requirement for your network as well as improve the efficiency of the utilization of spectrum and orbit resources.



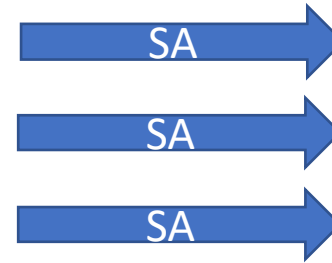
# Service Area



**Notice Database**



Better use the Gims to capture the service area



**Diagram Database**



Service area can be captured in the notice database via SpaceCap  
But not recommended for CRC, if so

Will import the service area from notice database into Gims database

# Service Area

## Regional limitations under Article 5

- If service area submitted is **larger than** what is allowed for under Article 5
- BR will **split** the service area, to the part that **has an allocation**, and another part that **has no allocation**.
- Administrations are encouraged to **remove** the part that **has no allocation** to facilitate the further treatment and publication.

- If service area submitted is **smaller or equal to** what is allowed for under Article 5,
- BR will **retain** the service area as submitted

**Service area must be the area allocated to the service concerned otherwise under No. 4.4**



# Example page

## of Table of frequency allocations in Article 5

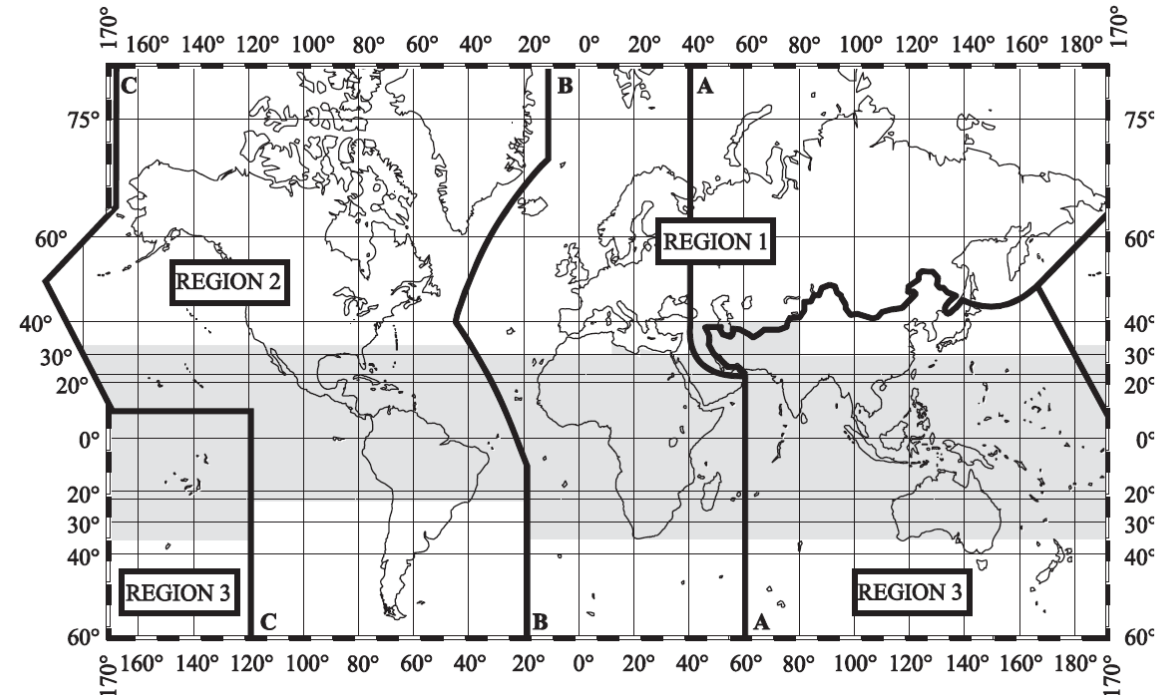
RR5-76

CHAPTER II – Frequencies

1 710-2 170 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 710-1 930	FIXED MOBILE 5.384A 5.388A 5.388B 5.149 5.341 5.385 5.386 5.387 5.388	
1 930-1 970 FIXED MOBILE 5.388A 5.388B  5.388	1 930-1 970 FIXED MOBILE 5.388A 5.388B Mobile-satellite (Earth-to-space) 5.388	1 930-1 970 FIXED MOBILE 5.388A  5.388
1 970-1 980	FIXED MOBILE 5.388A 5.388B 5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F	
2 010-2 025 FIXED MOBILE 5.388A 5.388B  5.388	2 010-2 025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)  5.388 5.389C 5.389E	2 010-2 025 FIXED MOBILE 5.388A  5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) 5.392	

Remember to exclude regions or countries which are not allocated for the frequency bands and services concerned under **Art.5**.



# RR No. 4.4

## Not recommend

Respect allocation under RR

“ Administrations of the Member States

**shall not assign** to a station any frequency **in derogation of** either the **Table of Frequency Allocations** in this Chapter or the other **provisions** of these Regulations, except on the express condition that such a station, when using such a frequency assignment, **shall not cause harmful interference** to, and **shall not claim protection** from harmful interference caused by, a station operating in accordance with the provisions of the **Constitution**, the **Convention** and these **Regulations.**”



# Rules of Procedure relating to **RR No.4.4**

- Administrations, prior to bringing into use any frequency assignment to a transmitting station operating under **No. 4.4**, shall determine:
  - a) That the intended use of the frequency assignment to the station under **No. 4.4** will not cause harmful interference into the stations of other administrations operating in conformity with the Radio Regulations;
  - b) What measures it would need to take in order to comply with the requirement to immediately eliminate harmful interference pursuant to **No. 8.5**.
- When notifying the use of frequency assignments to be operated under **No. 4.4**, the notifying Administration **shall provide a confirmation** that it has **determined** that these frequency assignments meet the conditions referred to above in item a) and that it has identified measures to avoid harmful interference and to immediately eliminate such in case of a complaint.

# Antenna Gain towards GSO orbit (**AG-GSO**)

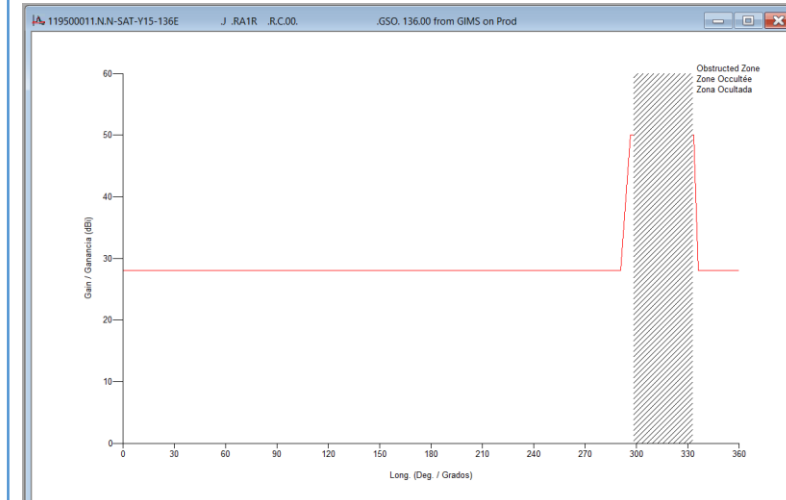
## Requirement for AG-GSO diagrams

### AP4 Annex 2 No. B.3.e

– if the space station is operating **in a band allocated both** in the Earth-to-space direction and in the space-to-Earth direction

– Check **validation rules** for reference

– Validate using the BRSIS Validation software with **Cross-Validation** feature



- By running **BRSIS Validation** with **Cross-val option**, if the diagram is required but missing in the notice, **fatal errors** will be reported

# Graphical Data concerning Antenna Radiation Pattern



GIMS

- ❑ the **co-polar** antenna radiation pattern (item **B.3.c.1** of Appendix 4) for the **space station antenna**
  - ❖ In the case of geostationary space stations required **only** for an antenna radiation beam that is directed towards another satellite
  
- ❑ the measured **co-polar** antenna radiation pattern or the **co-polar** reference radiation pattern for the **associated Earth stations** (item **C.10.d.5.a** of Appendix 4) **have to be provided either with**
  - ❖ **pattern ids** in the notice database or
  - ❖ **Equations/tables** describing the pattern
  - ❖ diagrams in the **Gims database**
  - Diagrams must be imported into a Gims database and marked with the correct header elements
  - Please follow the guide on how to capture the diagrams in Gims as shown in the website below

<https://www.itu.int/ITU-R/go/space-AdditionalDataUnderAP4/en>

# For non-standard Antenna Radiation Patterns



- **Co-polar Gain values** must be provided for **all off-axis angles (0 to  $\pm 180^\circ$ )**
- **Equations/tables** describing the pattern should be provided in this case the Bureau will assign new pattern IDs in the APL
- Diagrams not acceptable by BR's examination software, such as images, default to **AP8** antenna pattern

# Example of SpaceCap\_ Antenna Radiation Pattern for S/S

SpaceCapture V9

File Edit Tools View Window Help



GeoStationary Notice: [redacted]

Attachments

Notice	Station	Beam	Group	Strapping	Noise Gamma
--------	---------	------	-------	-----------	-------------

Notice Id: [redacted] Administration: D Satellite Network: [redacted] More...

Characteristics of the Beam

B2.  Receiving Beam  Transmitting Beam


B1.a. Beam Designation: [redacted] B1b.  Steerable Beam  Add of the Beam  Mod  Sup  Beam has Sensors


Old Beam Designation (if changed) [redacted]

Antenna Characteristics

B3a1. Maximum Isotropic Gain +/- dBi: 18.6 B3d. Pointing Accuracy Degrees +/-: 0.1

Antenna Radiation Pattern

B3c1. Co-polar Radiation Pattern Id: [redacted] 

or B3c1 Pattern in the form of equations/diag. See Attach no. 

List of Available Groups

- Group 260 Page No. 1
- Group 261 Page No. 2
- Group 262 Page No. 3
- Group 263 Page No. 4
- Group 264 Page No. 5
- Group 265 Page No. 6
- Group 266 Page No. 7
- Group 267 Page No. 8
- Group 268 Page No. 9
- Group 269 Page No. 10
- Group 270 Page No. 11
- Group 271 Page No. 12
- Group 272 Page No. 13

For space station/beam level,  
only for inter-satellite link



# Example of SpaceCap\_ Antenna Radiation Pattern for E/S

SpaceCap V9

File Edit Tools View Window Help

CR/NOTIF API RAST PLAN RS49/552

GeoStationary Notice:

Attachments	Station	Beam	Group	Emissions	Frequencies
Notice	Special Section	<b>Assoc Earth Station</b>	Assoc Space Station	Strapping	Noise Gamma

Notice Id: [ ] Adm: D Satellite Network: [ ] Beam Id: CMD R Group Id: 260

C10b2. Type of Station  
 Typical  Specific

C10b1. Associated Earth Station Name  
TYPICAL C7.0M

Old Station Name (if changed) [ ]

C10d1. Cls Strn	C10d2. Nat Srv
TD	CV

C10d. Antenna Characteristics

3. Maximum Isotropic Gain: 51 +/- dBi

4. Beamwidth: 0.47 Degrees

7. Diameter: [ ] Meters


9. Dgso: [ ] Meters

C8g1. Max Aggregate Power: [ ] dBW

C8g2. Aggregate Bandwidth: [ ] kHz

C8g3. Bandwidth  
 Corresponds to Aggr Bandwidth

Antenna Radiation Pattern

C10d5a1. Co-polar Radiation Pattern Id: 58 

[A-25\\*LOG\(FI\) ==> APENST806V01](#)

C10d5a2. Diagram attached. See Attachment no.: [ ]

or diagram no in Gims database [ ]

Coefa: 29 Coefb: [ ]  
Coefc: [ ] Coefd: [ ]  
phi1: [ ]



# For standard **co-polar** Antenna Radiation Patterns



Kindly indicate the antenna pattern IDs by selecting from the Antenna Pattern Library (APL) available at the webpage:

<https://www.itu.int/en/ITU-R/software/Pages/ant-pattern.aspx>

## Eg. Earth Station **co-polar** Antenna Radiation Patterns

AP7	APERR_012V01	Appendix 7 Earth station antenna pattern for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz.	Receiving	32
			Transmitting	75
Non-directional	APEND_099V01	Non-directional earth station antenna pattern.	Receiving	607
			Transmitting	608

## Eg. Space Station **co-polar** Antenna Radiation Patterns

Non-directional	APSDN_499V01	Non-directional space station antenna pattern.	Receiving	610
			Transmitting	609

# How to prepare the Notice Database



**BRsoft V9.0**



**Appendix 4**



**No fatal error**

**Cross validation**



# Organize different allocations in different Groups

Different allocation ↔ Different Provision ↔ Different finding

- Don't include different main services in the same group, such as :

- EC and EB, EV
- EI and EB, EV
- EC and EI
- EH and EW ... ..

Due to the potentially **different findings** for **different allocations**, the group should be split into their individual main service

- Pay more attention of the sub-services

- e.g.  $EI = EG + EU + EJ$ ;  $EJ = E5 + E6$
- Do not repeat them in one group e.g. (EI & EG), should simply submit as EI or EG only
- If characteristics are different for the sub-service, then submit as **separate groups**:
  - E.g. EU EJ in one group, EG in another group
  - E5 in one group and E6 in another ... ..

## For example: Split **EI** // **EG/EU/EJ** // **E5/E6**

Frequency MHz	Direction R, E, Both	Original Class of station concerned	Class of station split into			Provision
			Group 1	Group 2	Group 3	
1087.7 - 1092.3	R	EJ *	E5	E6	-	No. 5.328AA
1545 - 1555	E	EJ *	E5	E6	-	No. 5.357A
1610.0 - 1626.5	B	EJ *	E5	E6	-	No. 5.367
1613.8 - 1626.5	E	<b>EI</b>	<b>E5</b>	<b>E6</b>	<b>EU + EG</b>	No. 5.365
1646.5 - 1656.5	E	EJ *	E5	E6	-	No. 5.357A
5000 - 5030	B	EJ *	E5	E6	-	No. 5.443AA
5030 - 5091	B	EJ *	E5	E6	-	No. 5.443D
5091 - 5150	B	EJ *	E5	E6	-	No. 5.443AA
14000 - 14500	R	<b>EI</b>	<b>EU + EJ</b>	<b>EG</b>	-	No. 5.506A

- \* When allocated to the aeronautical mobile-satellite (R) service (either on a primary basis or under No. 9.11 / 9.21), EJ => E5 + E6
- EI = EU + EG + EJ and in case above, EI => (EU + EG) + (E5) + (E6)

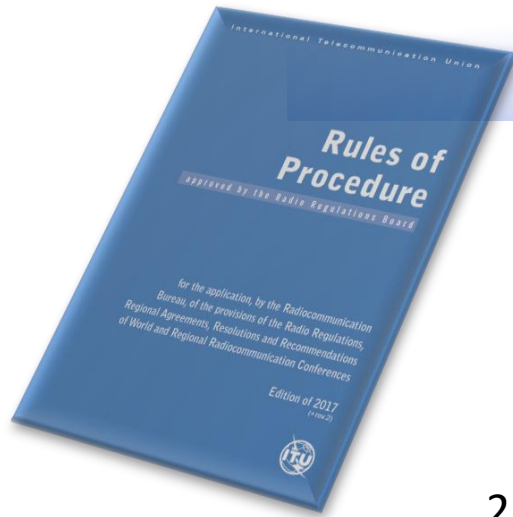
# Space Operation Service

Space operation: ET  $\neq$  EK, ER, ED

2 In the No. **11.31** examinations, notices concerned with **space operation functions** will be considered in conformity with the Table of Frequency Allocations ( favourable Finding) in the case where the assigned frequency (and the assigned frequency band) lies in a frequency band allocated to the:

- space operation **service**, or
- the main service in which the space station is operating (e.g. FSS, BSS, MSS).

3 In the case where the assigned frequency concerning **space operation functions**, lies in a frequency band allocated to a service in which the space station has **no operating function** the No. **11.31**, finding will be unfavourable.



**RoP No. 1.23**

# RES 155 for UAS CNPC (GSO FSS)

see ITU-R Circular Letter [CR/407](#)

- The class of stations "**UG**" for **earth stations on board unmanned aircraft** communicating with a space station of a **geostationary-satellite** network in the **fixed-satellite service** for the **control and non-payload communications of unmanned aircraft systems in non-segregated airspaces** in the frequency bands listed under resolves 1 of Resolution **155** (WRC-15).
- The Bureau posts for information only, the relevant part of the submission that includes the class of stations "**UG**" in a separate "**as received**" notice for FSS networks for UAS CNPC links at:
  - <https://www.itu.int/net4/ITU-R/space/UAS-submissions>.

# RES 156 for ESIM (GSO FSS)

see ITU-R Circular Letter [CR/393](#)

- Use of the frequency bands **19.7-20.2 GHz** and **29.5-30.0 GHz** by earth stations in motion communicating with **geostationary** space stations in the **fixed-satellite service** under provision **No. 5.527A**

- Class of station :

- **UF** for the earth station
- **EC** for the space station

Some new class of stations **UU, UO, US** for **ESIMs** in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz referred to under No. **5.517A** are **not receivable** in coordination request (see Resolution **169** (WRC-19) and BR circular letter **CR/461**)

Resolves 1.5 of RES 156: shall submit to the Bureau a **commitment** for implementation of *resolves 1.4* above;

- comply with the offaxis e.i.r.p. density levels
- shall not claim protection or impose constraints on the development of these services operating in the frequency band 19.7-20.1 GHz in Regions 1 and 3;
- shall ensure that such operations do not cause unacceptable interference
- immediately cease or reduce the interference to the acceptable level
- ... ..

**Many conditions, please see details under RES 156**

The symbol “UC” was no longer used for submission purposes as of **1 January 2017**, as it was superseded by the new symbol “UF” as defined.

# RES 163/164 in 14.5-14.8 GHz (GSO FSS )

- Feeder link for BSS under **No. 5.510** in Region 2 only
- Not for feeder link for BSS
  - Resolution **163** (14.5-14.75 GHz) – specific countries in **Regions 1 and 2**
  - Resolution **164** (14.5-14.8 GHz) – Specific countries in **Region 3**



Use **GIMS** software to capture these countries as a service region with the **symbols** Res.163 or Res.164

- Specific data requirements when used under Res **163/164**:
  - **A16c commitment** must be provided
    - *will meet the separation distance as specified in No. 5.509E and the power flux-density limits that are specified in No. 5.509D*
  - **Antenna diameter** must be provided
    - *Minimum 6m (No.5.509C)*



# Earth Station Antenna Diameter

Associated earth station **antenna diameter** in meters  
(AP4 Annex 2 No. C.10.d.7)

- required for fixed-satellite service (EC) operating in the frequency bands
  - 13.75-14 GHz
  - 14.5-14.8 GHz (not for feeder link for the BSS under Res **163/164**)
  - 24.65-25.25 GHz (Region 1)
  - 24.65-24.75 GHz (Region 3)
  - **51.4-52.4 GHz (WRC-19)**
- required for maritime mobile-satellite service (EG) operating in the frequency band 14-14.5 GHz
- **Take note of the restrictions on earth station diameters in the footnote to the Table of Frequency Allocations**



# RoP relating to No. 21.16

## – PFD limits for steerable beams

- RoP relating to **No.21.16** requires the following for **steerable** beams:
  - Administration should **state** that the applicable PFD limits will be met by applying **a method** with descriptions
    - One possible example of such a method is described in the Annex to the Rule relating to No. **21.16**.
    - Following changes in WRC-15 to B.3.b.1 of Appendix 4, **V8** software has been modified such that user just need to tick a **check box** to indicate compliance with PFD limits using, as a default, **the method described in Annex 1 to RoP 21.16**.
    - If other methods are used, **description** of the method should be provided as an **attachment**
  - Note that even with the method specified, there are **other conditions** specified in the RoP to be satisfied.

# Some Tips:



Inclination  $\leq 15^\circ$

- No. 1.185 + Article 9 Footnote A.9.6A



Station keeping / Tolerance of space stations  
 $\leq 0.1^\circ$  for FSS / BSS

- No. 22.6 – No.22.10 + ROP relating to 22.10



Station keeping / Tolerance of space stations  
 $\leq 0.5^\circ$  for other services

- No. 22.11 – No.22.18 + ROP relating to 22.14

# Modification of characteristics

- For MOD, it's recommended to **clone** from the target from SRS mdb, it will automatically capture the action codes for beams/groups and target group id's, remove those beams/groups not concerned by the modification
- Pay more attention of all **action codes** for Notice, Beams, Groups, Earth stations etc.
- For **MOD beam**: indicate if any of diagrams has been modified vs. the original notice
- For **MOD group**: indicate the **target group IDs** previously published and the action codes for all groups and for all associated Earth stations via SpaceCap
- Pay more attention for the **associated Earth stations** , remove those Earth stations not concerned by the modification, capture manually the action codes (**add, mod, sup**) for all Earth stations.

**Avoid submitting a frequency range that span across frequency bands with different regulatory date limits previously submitted or published, if possible!**

# API/C and Regulatory date limits in accordance with No.11.44

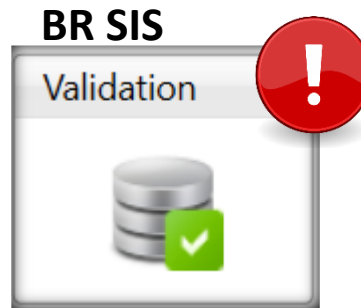
- For new CRC notice  
all frequency bands will be extracted in an API/C with new regulatory dates
- For mod CRC notice
  - **No change in orbital position**
    - Only **new frequency bands** will be extracted and published in an API/C with the regulatory start date same as the date of receipt of the CR/C Mod
  - **Change in orbital position**
    - **All frequency bands** will be extracted and published in an API/C with the regulatory start date same as the date of receipt of the CR/C Mod

# Rules concerning Receivability

## Appendix 4



**Notice Database**



**Cross validation**



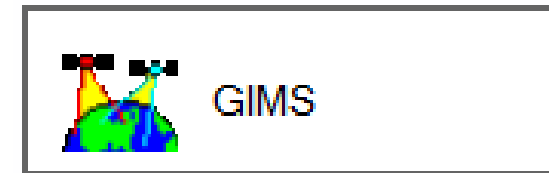
**Diagram Database**

Use the latest BR software V9.0



Check **completeness** and **correctness** to establish a formal date of receipt

**No fatal error !**



**CR/464 only GIMS mdb format shall be receivable under RES 55.**

# Where to go for submission?



## E-Submission of satellite network filings

available at <https://www.itu.int/ITU-R/go/space-submission>

telefax or mail is **not** required

recorded on the **actual date of receipt**

## E-Communication system

available at <https://www.itu.int/ITU-R/go/space-communications>

generally used for response of BR communications

for comments which don't require SpaceCom mdb files

for correspondences between administrations

## Telefax and E-mail [BRmail@itu.int](mailto:BRmail@itu.int)

recorded as received on the **actual date of receipt**

generally used for response of BR communication

telefax is not recommended

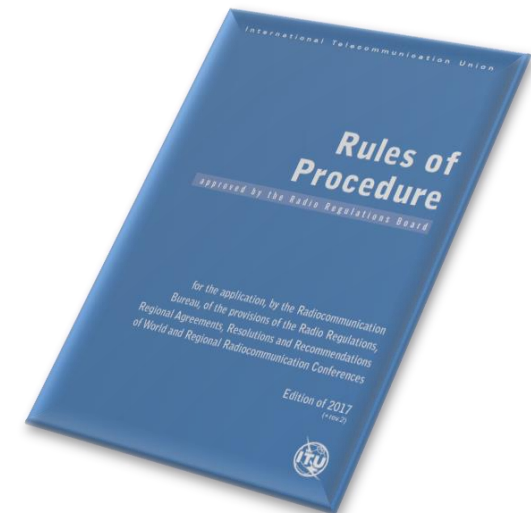
## Postal Mail

recorded on the **first working day**

following the period of closure

(not recommended)

### Administrative Circulars and Circulars Letters



# Reply to the Bureau for clarification

- Administrations sometimes need to send **revised mdb** files
- To avoid these being treated as a modification with a new date of receipt, **do not upload them like a new submission**
- Please submit in e-Submissions system using “**others**” category, and attach a letter to **explain** that it is a reply to the Bureau’s enquiry

<https://www.itu.int/ITU-R/go/space-submission>

- It is also possible to send the replies by **e-mail** to the [BRmail@itu.int](mailto:BRmail@itu.int)
- As from 23 October 2019, the **e-Communications** system enable exchange of correspondence and other information between Administrations and the Bureau, as well as between Administrations (see CR/447, CR/ 450)

<https://www.itu.int/ITU-R/go/space-communications>



# Free online ITU-R Publications



**Radio Regulations  
New edition 2020!**

➤ **ITU-R Radio Regulations 2020**

<http://www.itu.int/pub/R-REG-RR/>

➤ **ITU-R RoP**

<http://www.itu.int/pub/R-REG-ROP/en>

➤ **ITU-R Recommendations**

<http://www.itu.int/publ/R-REC/>

➤ **ITU-R Reports**

<https://www.itu.int/pub/R-REP/>

➤ **ITU-R CR CIR**

<https://www.itu.int/md/R00-CR-CIR/en>

➤ **WRC-19 Final Acts**

<https://www.itu.int/en/mediacentre/Pages/CM01-2020-WRC19-Final-Acts.aspx>

# Free online ITU-R Publications

- **Latest BR Software**

- <https://www.itu.int/ITU-R/go/space-software/en>

- **SNL online** - *basic reference info concerning space stations*

- <https://www.itu.int/ITU-R/space/snl/index.html>

- **SNS online** - *TIES account required, need to be an ITU member (member state, ITU-R sector member, associate or academia)*

- <https://www.itu.int/sns/>

- **BR Space Service Support websites**

- <https://www.itu.int/en/ITU-R/space>

# Thank you!



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ONLINE2020

ITU – Radiocommunication Bureau  
Questions to [BRmail@itu.int](mailto:BRmail@itu.int) or [Xiuqi.Wang@itu.int](mailto:Xiuqi.Wang@itu.int)

