



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

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Geneva, Switzerland

# BSS and associated BSS Feeder-link Plan and List

(Volume 2 - Appendix 30/30A – 279 pages)

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BR Space Services Department  
International Telecommunication Union

[www.itu.int/go/wrs-22](http://www.itu.int/go/wrs-22)

#ITUWRS

# Outline

- **Background**
- **Frequency Bands**
- **Plans**
- **Article 4 (Additional uses in Regions 1 and 3 or Modification in Region 2)**
- **Article 5 (Notification including Suspension and Resumption)**
- **Other Articles**
- **Technical Examination**

# History

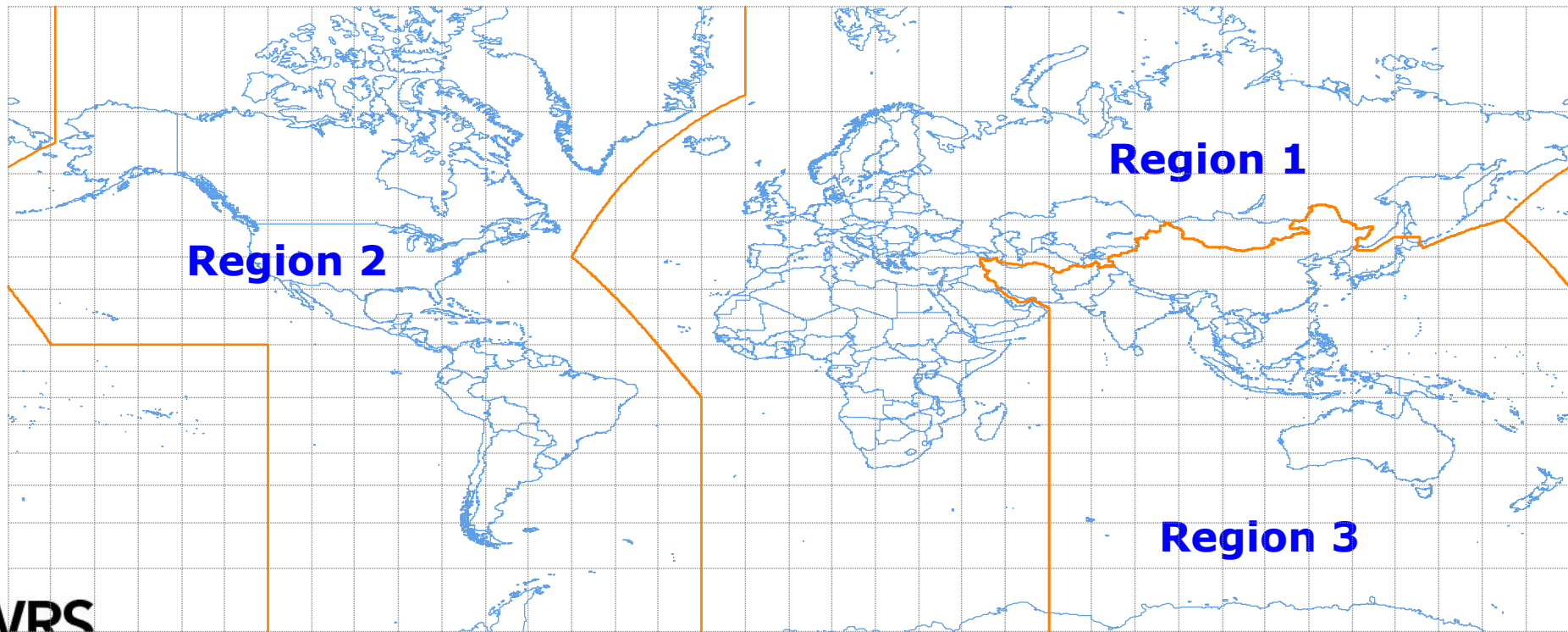
- **WARC-77** established BSS Plan for Regions 1 and 3
- **RARC-83** established BSS and associated feeder-link Plan for Region 2
- **WARC ORB-85** included Region 2 BSS and associated Feeder-link Plan into the Radio Regulations
- **WARC ORB-88** established Region 1 &3 BSS feeder-link Plan
- **WRC-97** revised Region 1&3 BSS and associated feeder-link Plans
- **WRC-2000** revised Region 1&3 BSS and associated feeder-link Plans
- **WRC-2003** revised procedures and sharing criteria for Region 1&3 BSS and associated feeder-link Plans
- **Subsequent WRCs** mainly improved the regulatory procedures like bringing into use, suspension/resumption, examination procedure, revision to orbital position limitations etc...

# Frequency bands

Region	BSS	Feeder-link	Total Bandwidth	No.Channel	Channel BW
1	11.7 – 12.5 GHz	17.3 - 18.1 GHz 14.5-14.8 GHz	800 MHz 300 MHz	40 14	27 MHz
3	11.7 – 12.2 GHz	17.3-18.1 GHz 14.5-14.8 GHz	500/800 MHz 300 MHz	24/40 14	27 MHz
2	12.2 – 12.7 GHz	17.3 – 17.8 GHz	500 MHz	32	24 MHz

*Note: 14.5-14.8 GHz is for service area outside Europe (Ref. RR No.5.510).*

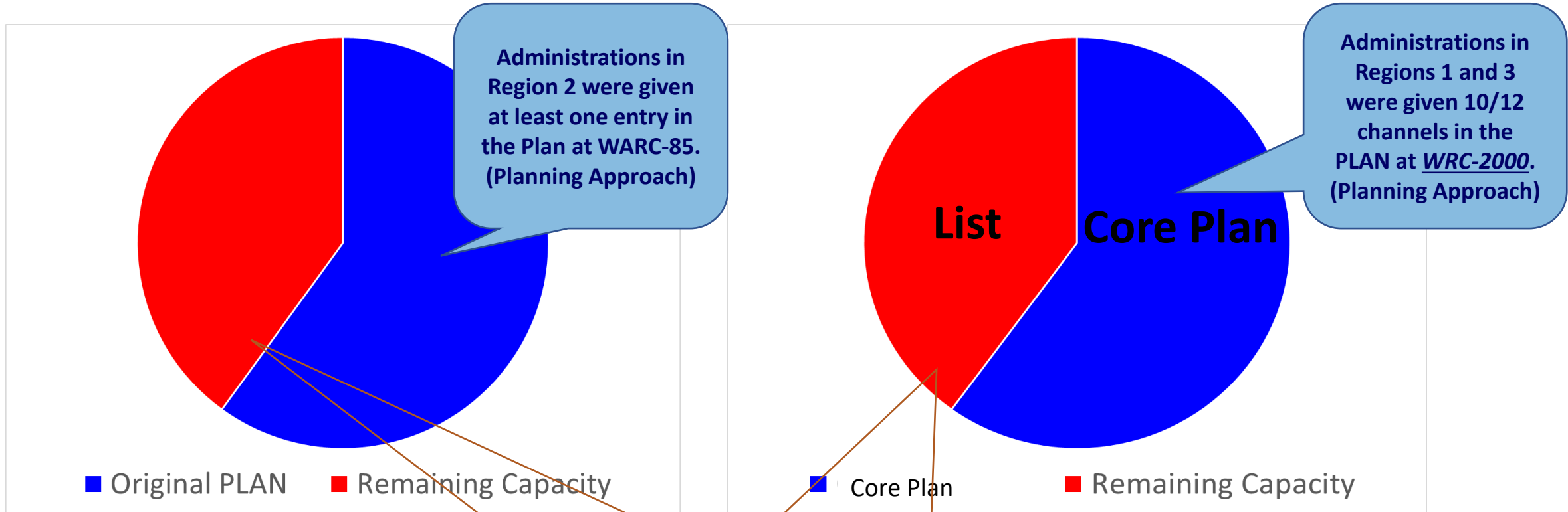
**BSS  
Plans  
are  
Regional  
Plans.**



# Plan v.s Capacity obtained through Art.4 Procedure

Region 2

Regions 1 and 3



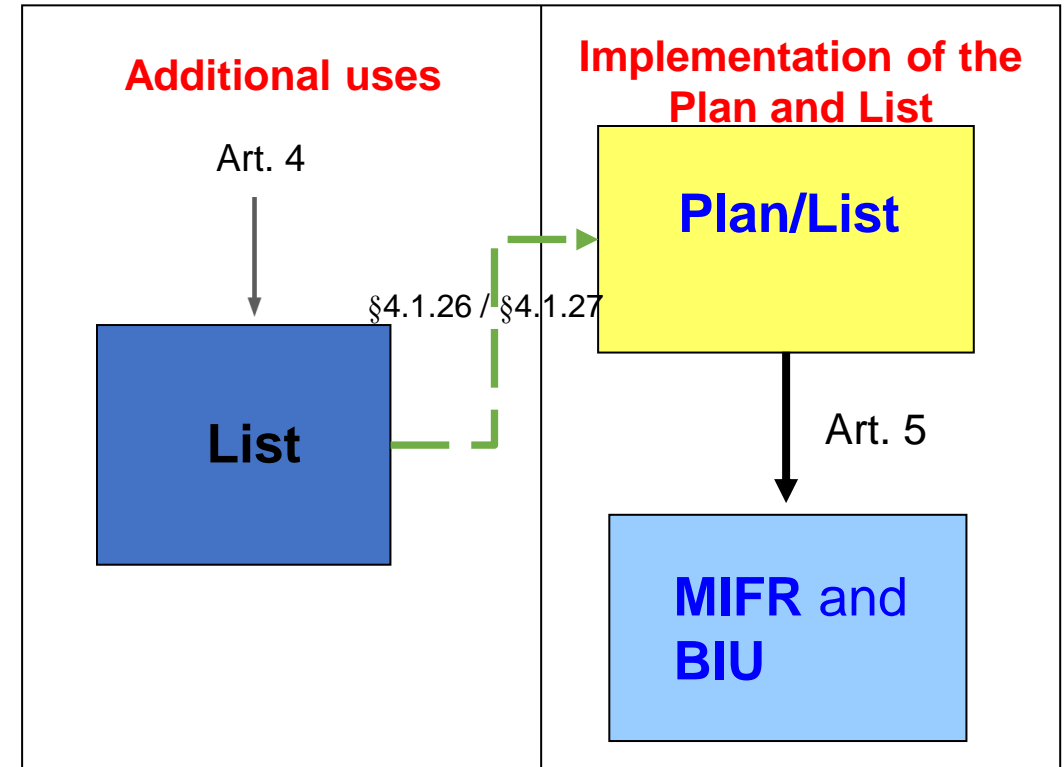
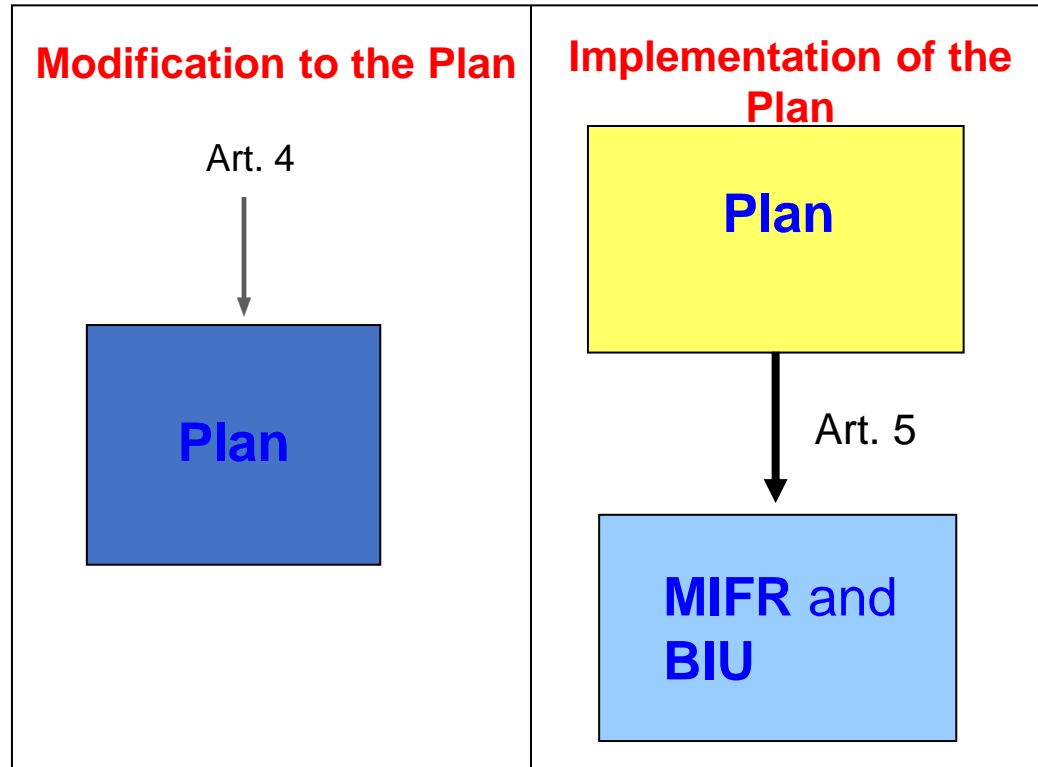
Obtained through Article 4 procedure  
"First-Come First-Served"

**Planning Approach** is to ensure equitable access to GSO orbit/spectrum among ITU member states.  
BSS Plans are Regional Plans and assignments Plans.

# AP30/30A Main Procedures: Articles 4 and 5

Region 2

Regions 1 and 3



## Original Plan in Region 2

Established by RARC-83 and incorporated into RR by WARC ORB-85:

- ✓ National coverage/service areas
- ✓ 32 analogue channels (24 MHz) for each Administration in Region 2
- ✓ BSS Plan: Article 10 of Appendix **30**
- ✓ Associated BSS Feeder-link: Article 9 of Appendix **30A**

## Core Plan in Regions 1 and 3

Established by WRC-2000:

- ✓ National coverage/service areas
- ✓ 10 digital channels (27 MHz) for Administration in Region 1
- ✓ 12 digital channels (27MHz) for each Administration in Region 3
- ✓ BSS Plan: Article 11 of Appendix **30**
- ✓ Associated BSS Feeder-link: Article 9A of Appendix **30A**

# Original Plan in Region 2

## e.g. Article 10 of Appendix 30

# Core Plan in Regions 1 and 3

## e.g. Article 11 of Appendix 30

12 224.00 MHz (1)

1	2	3	4		5		6	7	8	9	
ALS00002	-166.20	1	-149.66	58.37	3.76	1.24	170	1	59.7	9/GR1	10
ALS00003	-175.20	1	-150.98	58.53	3.77	1.11	167	1	60.0	9/GR2	10
ARGINSU4	-94.20	1	-52.98	-59.81	3.40	0.80	19	1	59.9	9/GR3	
ARGSUR04	-94.20	1	-65.04	-43.33	3.32	1.50	40	1	60.7	9/GR3	10
B CE311	-64.20	1	-40.60	-6.07	3.04	2.06	174	1	61.6	8 9/GR7	10
B CE312	-45.20	1	-40.27	-6.06	3.44	2.09	174	1	61.0	8 9/GR9	10
B CE411	-64.20	1	-50.97	-15.27	3.86	1.38	49	1	62.6	8 9/GR7	10
B CE412	-45.20	1	-50.71	-15.30	3.57	1.56	52	1	62.7	8 9/GR9	10
B CE511	-64.20	1	-53.10	-2.90	2.44	2.13	104	1	63.0	8 9/GR7	10
B NO611	-74.20	1	-59.60	-11.62	2.85	1.69	165	2	62.8	8 9/GR8	10
B NO711	-74.20	1	-60.70	-1.78	3.54	1.78	126	2	62.8	8 9/GR8	10
B NO811	-74.20	1	-68.76	-4.71	2.37	1.65	73	2	62.8	8 9/GR8	
B SU111	-81.20	1	-51.12	-25.63	2.76	1.05	50	1	62.8	8 9/GR6	10
B SU112	-45.20	1	-50.75	-25.62	2.47	1.48	56	1	62.2	8 9/GR9	
B SU211	-81.20	1	-44.51	-16.95	3.22	1.36	60	1	62.5	8 9/GR6	10
B SU212	-45.20	1	-44.00	-16.87	3.20	1.96	58	1	61.3	8 9/GR9	

Basic characteristics of the Regions 1 and 3 Plan (sorted by administration)

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
			Long.	Lat.	Major axis	Minor axis	Orientation			Space station antenna code	Shaped beam	Co-polar	Cross-polar	Code	Gain						
AFG	AFG_100	50.00	65.88	33.86				CB_TSS_AFGA		42.71		MODRES	35.50	CL		58.4	27MOG7W			P	
AFS	AFS02100	4.80	24.50	-28.00	3.13	1.88	27.00	R13TSS		37.24		MODRES	35.50	CL		59.1	27MOG7W			P	
AGL	AGL29500	-24.80	16.06	-12.45	2.42	1.88	77.88	R13TSS		37.87		MODRES	35.50	CL		59.1	27MOG7W			P	
ALB	ALB29600	62.00	20.04	41.23	0.60	0.60	61.32	R13TSS		48.88		MODRES	35.50	CL		58.9	27MOG7W			P	
ALG	ALG_100	-24.80	1.86	27.60				CB_TSS_ALGA		39.59		MODRES	35.50	CL		54.5	27MOG7W			P	
AND	AND34100	-37.00	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		56.5	27MOG7W			P	7
ARM	ARM06400	22.80	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	35.50	CR		58.9	27MOG7W			P	
ARS	ARS_100	17.00	44.72	23.76				CB_TSS_ARSA		37.81		MODRES	35.50	CL		57.7	27MOG7W		54	P	
ARS	ARS34000	17.00	52.30	24.80	2.68	0.70	143.00	R13TSS		41.71		MODRES	35.50	CL		59.2	27MOG7W		54	P	5
AUS	AUS00400	152.00	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	35.50	CR		58.2	27MOG7W		30	P	
AUS	AUS0040A	152.00	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		30	P	
AUS	AUS0040B	152.00	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		30	P	
AUS	AUS0040C	152.00	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		30	P	
AUS	AUS00500	152.00	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	35.50	CL		59.4	27MOG7W			P	
AUS	AUS00600	152.00	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	35.50	CL		58.4	27MOG7W			P	
AUS	AUS00700	164.00	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	35.50	CR		58.5	27MOG7W		31	P	
AUS	AUS0070A	164.00	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		31	P	
AUS	AUS00800	164.00	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	35.50	CL		58.8	27MOG7W			P	
AUS	AUS00900	164.00	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	35.50	CR		59.3	27MOG7W		32	P	
AUS	AUS0090A	164.00	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		32	P	
AUS	AUS0090B	164.00	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27MOG7W		32	P	
AUS	AUSA_100	152.00	132.38	-38.37				CB_TSS_AUSA		48.88		MODRES	35.50	CR		58.9	27MOG7W			P	
AUS	AUSB_100	164.00	132.38	-38.37				CB_TSS_AUSB		48.88		MODRES	35.50	CL		58.9	27MOG7W			P	
AUT	AUT01600	-18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CR		59.1	27MOG7W			P	
AZE	AZE06400	23.20	47.47	40.14	0.93	0.60	158.14	R13TSS		46.88		MODRES	35.50	CL		58.9	27MOG7W			P	
BDI	BDI27000	11.00	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	35.50	CL		58.4	27MOG7W			P	
BEL	BEL01800	38.20	5.12	51.96	1.00	1.00	24.53	MOD13FRTSS		44.45		MODRES	35.50	CL		55.5	27MOG7W			P	5
BEN	BEN23300	-19.20	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	35.50	CL		58.3	27MOG7W			P	

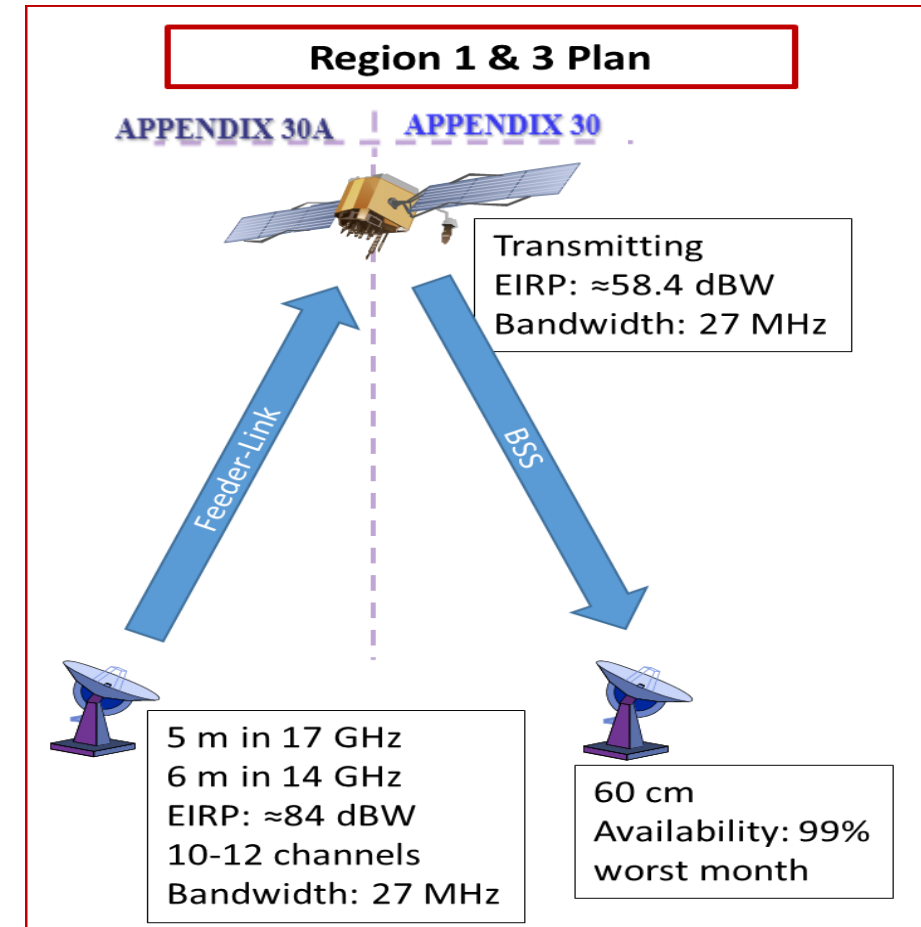
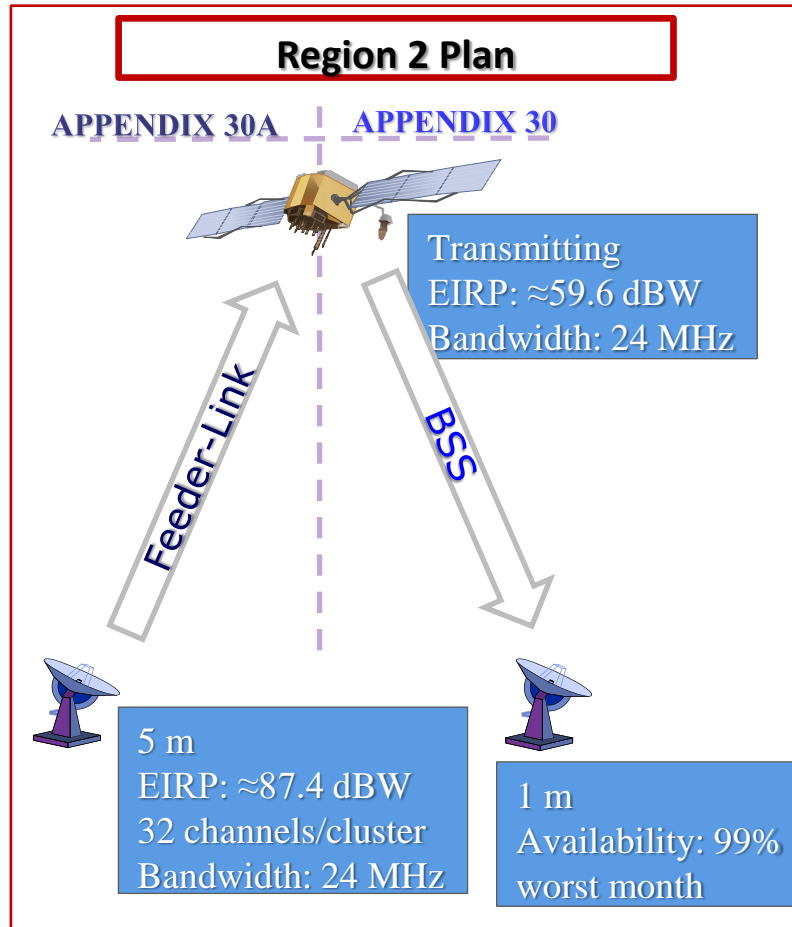


Beam name, orbital position, channels, elliptical parameters, polarization, power levels, grouping and remarks.





# Standard characteristics for Plans (App30 - Annex 5 and App30A - Annex 3)



National coverage/service areas

C/N: 14 dB for 99% worst month

Elliptical beams

OEPM for Region 2 and EPM for Regions 1 and 3

# Standard characteristics for Plans

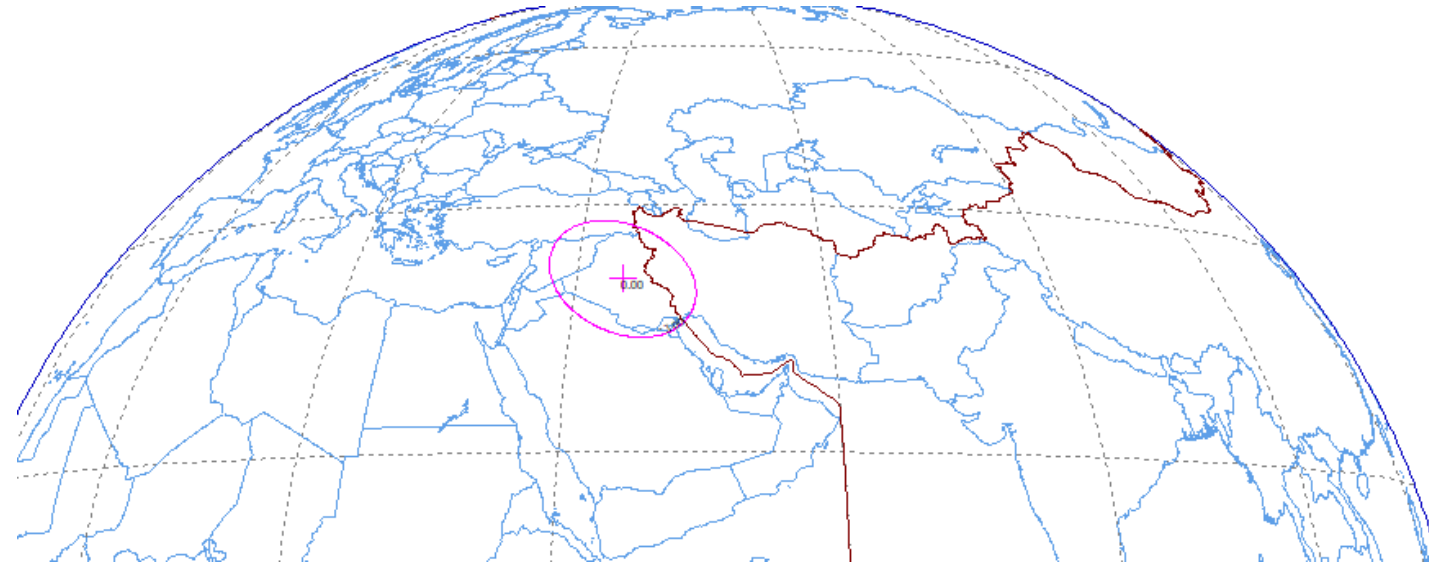
- **Elliptical beam:**

- ❖ Antenna pattern (Co-pol and Cross-pol)
- ❖ Boresight (Longitude and Latitude)
- ❖ Major axis
- ❖ Minor axis
- ❖ Orientation
- ❖ Beamlet

*Maximum antenna gain derived from:*

$$27843 / (\text{major axis} * \text{minor axis})$$

*Shown in GIMS as -3 dB antenna relative gain contour and a boresight.*



# Compatibility among assignments in Plan

- **Region 1 & 3: EPM** (Equivalent Protection Margin)
- **Region 2: OEPM** (Overall Equivalent Protection Margin)

- Calculation:

- **Region 1 & 3:**

$$EPM = -10 \times \log \left( \sum_{i=1}^3 10^{(-M_i/10)} \right)$$
$$M_i = \text{protection margin} = \frac{C}{I_{iaggr}} - PR_i$$

where:

*i* = interference type:

1 = co - channel

2 = upper first adjacent channel

3 = lower first adjacent channel

$PR_i$  = Protection Ratio for interference *i*

- **Region 2:**

$$OEPM = -10 \times \log \left( \sum_{i=1}^5 10^{(-M_i/10)} \right)$$
$$M_i = \text{protection margin} = \frac{C}{I_{iaggr}} - PR_i$$

where:

*i* = interference type:

1 = co - channel

2 = upper first adjacent channel

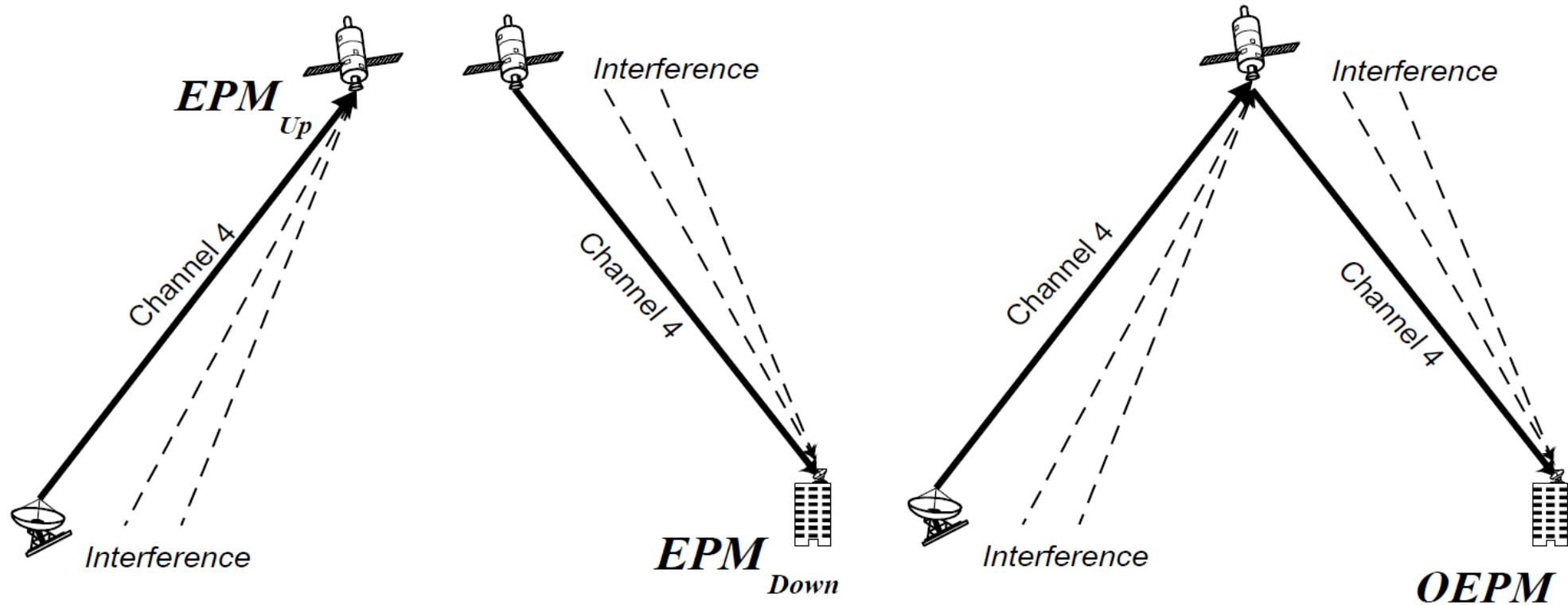
3 = lower first adjacent channel

4 = upper second adjacent channel

5 = lower second adjacent channel

$PR_i$  = Protection Ratio for interference *i*

# Difference between EPM and OEPM



**Regions 1 and 3 Approach**  
(separated links)

**Region 2 Approach**  
(overall link analyses)

More information  
on slides 61-63

# What if you want to have additional capacity beyond the core/original Plan

to have more capacity than what you were already given in the Regional Plan, you shall apply [Article 4 Procedures](#) of Appendix 30/30A.

Once the procedure successfully completed, the additional capacity would be recorded in the List in case of Regions 1 and 3 or in Region 2 Plan in case of Region 2.

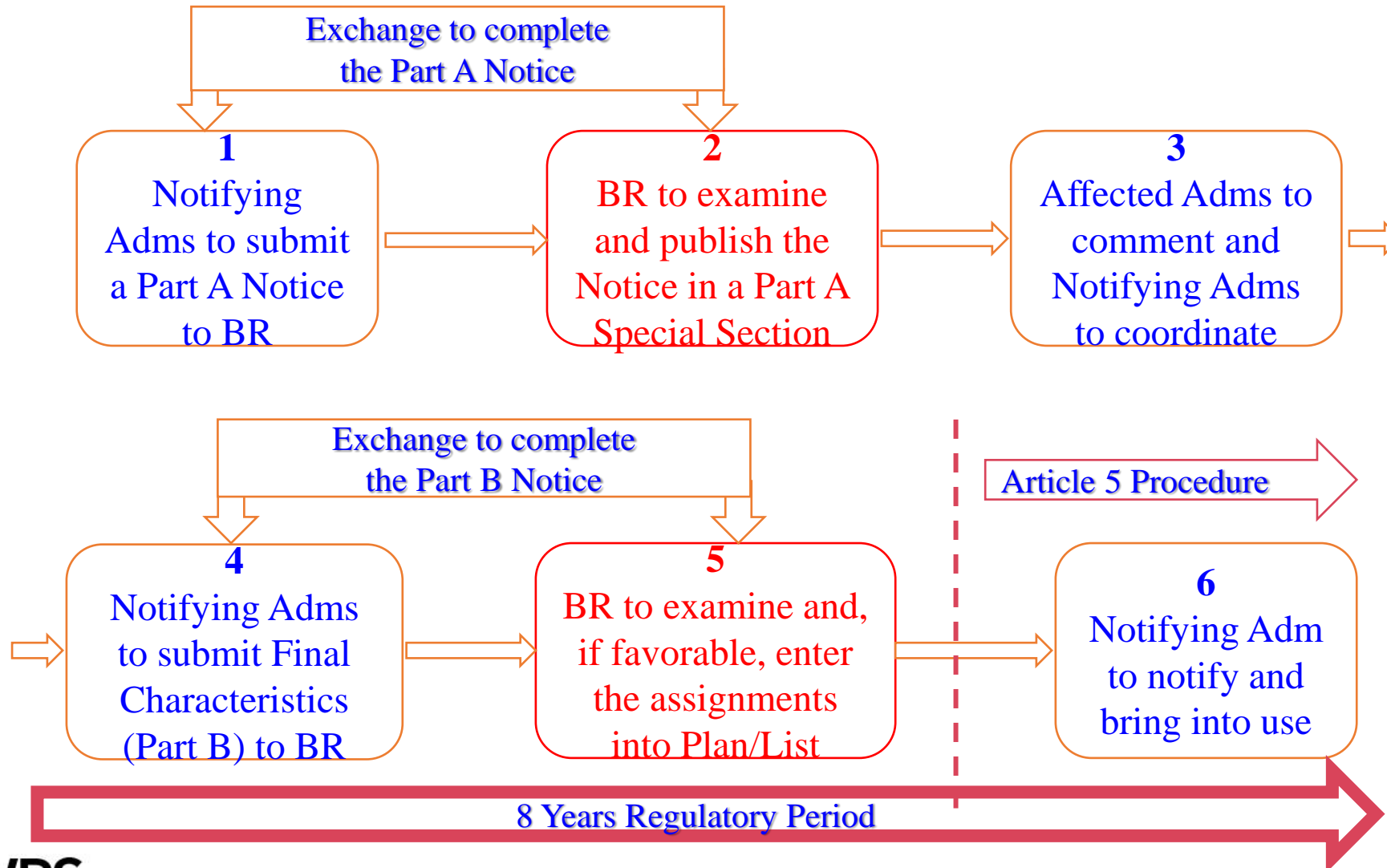
Modification to the  
Region 2 Plan  
Article 4



Additional uses in  
Regions 1 and 3  
Article 4

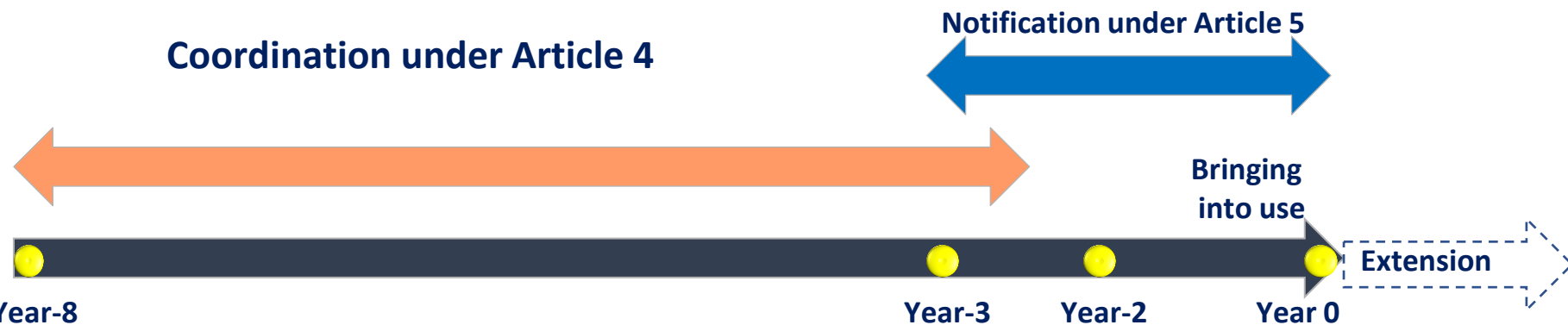


# Article 4



# Article 4 application has time limitation: 8-year Regulatory Period

- to complete Article 4 procedure to be included in the **List (for Regions 1&3)** or the **Plan (for Region 2)**
- to bring into use assignments (confirmation through notification procedure and in accordance with RR No.11.44B/11/44B2 and Res.40)
- to submit due diligence information (Resolution 49)
- can be extended to maximum 3 years in case of launch failure



# Article 4

## Containing procedures for:

- Notifying Administration to submit a notice for additional uses (Regions 1 and 3) or modification to the Plan (Region 2)
- the Bureau to carry out regulatory and technical examination
- Affected Administrations to comment to protect their Plan assignments/networks
- Notifying Administration to effect coordination with affected Administrations
- Request for assistance of the Bureau by notifying Administration and Affected Administrations.



# Article 4

- 1. Coordination Procedure based on “First-Come First-Served” Principle.**
- 2. Interaction between:**
  - **The Notifying Administration and the Bureau**
  - **The Notifying Administration and Affected Administrations**
  - **Affected Administration and the Bureau**
- 3. Mandatory Submission of Notices through E-Submission system**
- 4. Effect of coordination is necessary before requesting provisional entry under §§ 4.1.18 and 4.1.18bis in case of Regions 1 and 3 and under §§ 4.2.21A and 4.2.21B in case of Region 2.**
- 5. BR Soft applications should be used to prepare the Notices as well as to check affected Administrations/networks.**
- 6. Please do not hesitate to contact the Bureau for assistance prior or during or after the application of Article 4 Procedure.**

# Article 4

Action	BR Software application	Criteria
Preparation of submissions	SpaceCap, GIMS, GIBC/Appendix 30 30A, BR-SIS Validation.	
Identification of affected Administrations in the same Regional Plan/List	Mspace, BSS_Marg, SPS_Reports	OEPM, EPM, Coordination Arc, pfd.
Identification of affected administrations in other Regional Plan/List or other services	GIBC/PFD/EIRP GSO GIBC/PFD (space serv.) GIBC/Appendix 8	pfd, delta T/T

**Detail of Article 4 Procedure is contained in [Annex 1](#) to this Presentation.**

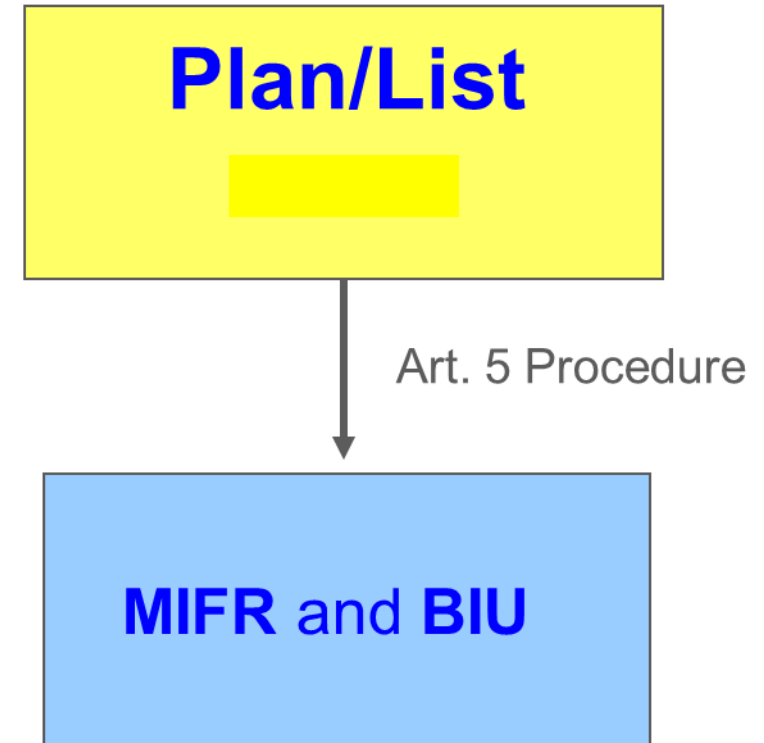
# Publications under Article 4

- **Special Sections AP30-30A/E(Reg. 2), AP30/E and AP30A/E (Reg. 1&3)**
  - **Part A:** Publication of proposed characteristics and administrations/networks considered affected
  - **Part D:** Establishment of requirements for agreement ([now only for Region 2](#))
  - **Part B:** Final characteristics entered into the List (Regions 1 and 3) or the Plan (Region 2)
  - **Part C:** Cancellation
- Databases
  - **On every BR-IFIC (Space services):**
    - **SPS\_ALL\_IFICXXXX.mdb** [Folder: Databases\AP30-30A]
    - GIMS Reference data (grefdbXXXX.mdb) [Folder: Databases\GIMS\_Data]
  - mspace\_results.mdb: only if there is Part A publication on that BR-IFIC.  
[Folder :Databases\AP30-30A\TEX\_Results]

# Implementation of the Plan/List (Article 5)

- Whenever an administration intends to bring into use a frequency assignment to a space station, it shall notify this frequency assignment to the Bureau.
- The notifying administration shall apply procedures in **Article 5 of Appendices 30 and 30A.**

## Implementation of the Plan and List



## Article 5 of Appendices 30 and 30A

- ✓ Can only be applied for an assignment in the Plan or List
- ✓ Notification cannot be receivable earlier than 3 years before the Planned Date of Bringing into use.
- ✓ Can be submitted at the same time of Part B submission in case of additional uses (Regions 1 and 3) or modification to the Plan (Region 2).
- ✓ Can indicate only changes with respect to the corresponding assignments in the Plan/List.
- ✓ Inform the Bureau of Bringing into use (RR No.11.44B/11.44B2 & Res.40).

# Article 5 of Appendices 30 and 30A

- ✓ In case of an assignment in the List, once it has been:
  - recorded in the Master Register, and
  - brought into use

it can be suspended for a maximum period of not exceeding 3 years.

- ✓ If it is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended.
- ✓ Suspension period shall be reduced if the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was.
- ✓ When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible.
- ✓ The Bureau may trigger the inquiry under RR No.13.6 when receiving request for suspension or confirmation of resumption of use.

# Protecting your PLAN/LIST

- Check BR publications on every BR IFIC (Space services).
- If your Administration is identified as affected, your Administration shall send comment to the notifying Administration and the Bureau **within 4 months from the date of the relevant BR IFIC publication.**

# Protecting your PLAN/LIST

- **R2:** No reply in 4 months means agreement to interference
- **R1&3:** No reply in 4 months means disagreement to interference...  
...however notifying administration can ask assistance from the Bureau. In this case:

**No reply within the 30 days referred to in § 4.1.10 d)**



**Affected Administration accepts an increase of harmful interference**



**Protection level from subsequent networks reduced !**



# Article 2A of Appendices 30 and 30A:

## Space Operation/TT&C in the Guardbands

- Coordination (Article 2A of Appendices **30** and **30A**)
- Notification (Article 11 of RR)

# Article 6 and Article 7 of Appendices 30 and 30A:

## Terrestrial

Coordination w.r.t Plan/List (Article 6)

## FSS

Coordination w.r.t Plan/List (Article 7)

# Technical Examinations

Part A	Part B
<ul style="list-style-type: none"><li>✓ Compliance with Table of Frequency Allocation</li><li>✓ Compliance with applicable pfd and e.i.r.p limits</li><li>✓ Identification of affected Adms/networks:<ul style="list-style-type: none"><li>➤ in the same Regional Plan</li><li>➤ in other Regional Plan</li><li>➤ In non-plan bands including Article 2A</li><li>➤ In terrestrial services</li></ul></li></ul>	<ul style="list-style-type: none"><li>✓ Compliance with Table of Frequency Allocation</li><li>✓ Compliance with applicable pfd and e.i.r.p limits</li><li>✓ Any agreement required but not provided (i.e. go back to Part A but using Part B characteristics)</li><li>✓ Part B resulting from agreement seeking</li><li>✓ Part B within envelope of Part A (i.e. use the latest SPS_ALL/SRS_ALL to check increase of interference)</li><li>✓ Obligation to coordinate before request provisional entry</li><li>✓ Compliance with requirements for provisional entry if request.</li></ul>



# Technical Examinations

Type of examination	BR Soft	Criteria	Reference	How to run
Compliance with Table of Frequency Allocation	BRSIS/Validation		RR Article 5 Article 2A	
Compliance with applicable pfd and e.i.r.p limits	GIBC/AP30 30A	pfd, e.i.r.p	Annex 1	Slides 49-50
Identification of affected adms/networks:				
✓ in the same Regional Plan/List	Mspace BSS_Marg SPS_Report	OEPM; EPM; pfd; Coordination Arc	Annex 1	Slides 51-53
✓ in other Regional Plan/List	GIBC/PFD(space serv.) GIBC/Appendix 8	pfd $\Delta T/T$	Annex 1	Slides 54-60
✓ In non-plan bands including Article 2A	GIBC/PFD(space serv.) GIBC/Appendix 8	pfd $\Delta T/T$	Annex 1 Annex 4	
✓ In terrestrial services	GIBC/PFD/EIRP GSO	pfd	Annex 1	

Videos showing how to run BR Soft can be found at:

<https://www.itu.int/en/ITU-R/space/Pages/wrs2020SpaceWorkshopVideo.aspx>

# Plan and List data

- All Plan and List assignment data can be found in the BR IFIC & at the ITU website:
  - <http://www.itu.int/ITU-R/go/space-plans/>
- Contained in the SPS database (SNS format)
- Contains the technical characteristics and reference situation for all Plan, List and pending Article 4 assignments
- The SPS database is evolving and is updated regularly

# Useful Website addresses for more information

- <http://www.itu.int/en/ITU-R/space/plans/>  
(General information relating to Space Plans)
- [http://www.itu.int/en/ITU-R/space/plans/Pages/SpaceCap\\_FAQ.aspx](http://www.itu.int/en/ITU-R/space/plans/Pages/SpaceCap_FAQ.aspx)  
(Guidelines for capturing Appendix 4 data)
- <http://www.itu.int/ITU-R/space/snl/>  
(SNL-on-Line; list of published networks, networks in the backlog)
- <http://www.itu.int/sns/>  
(SNS-online; online query on SPS\_ALL database)

# Thank you!

ITU – Radiocommunication Bureau

Questions to [brmail@itu.int](mailto:brmail@itu.int) or [thong.phamviet@itu.int](mailto:thong.phamviet@itu.int)

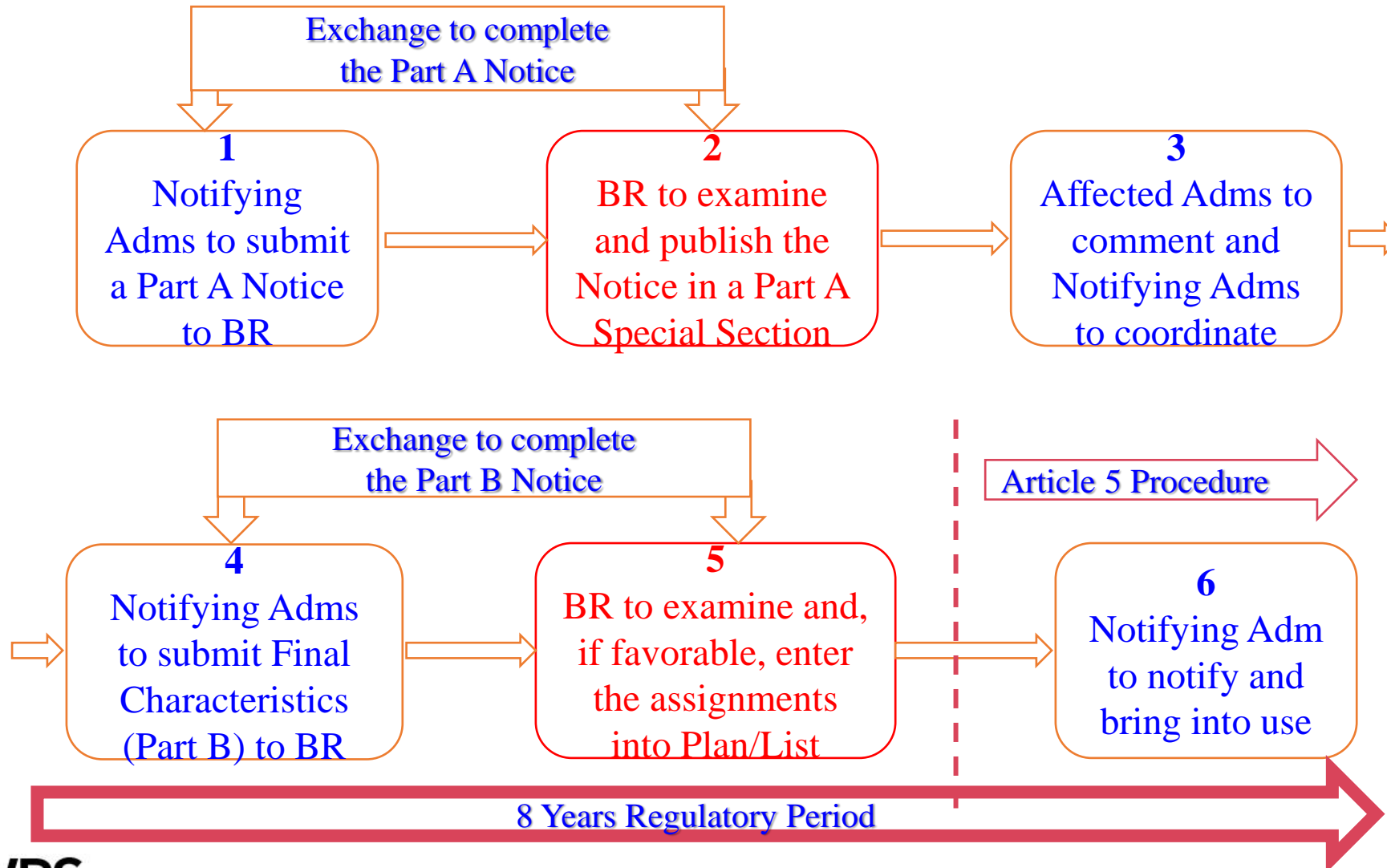


# Annex 1

## Article 4 Procedure



# Article 4 Procedure



# Article 4 Procedure

## 1. Notifying Adms to submit a Notice to BR

- **Prepare a Notice:**

- *Identify major parameters such as orbital position, channels, polarization, coverage and service areas, earth station sizes.*
- *Information to be submitted listed in Appendix 4*
- *Use SpaceCap to capture SNS database*
- *Use GIMS to capture GIMS data*
- *Use SpaceVal to validate the filing*
- *Contact BR for assistance if needed*

- **Submit the notice to BR:**

- *Make sure to already have had an E-submission account.*
- *Send the notice through E-submission system*

# Characteristics for Application of Article 4 of AP30/30A

- Networks submitted under Article 4 of AP30/30A can have different characteristics from those used for establishing Plans.

**For example:** use of shaped beam, extended coverage to Region and different sizes of earth stations.

- However, when “*shall*” is used in:
  - *Annex 5 of Appendix 30*
  - *Annex 3 of Appendix 30A*→ has to be observed.

**For example:** station keeping, minimum feeder-link earth station.

# Characteristics for Application of Article 4 of AP30/30A

- **Shaped beam:**
  - ❖ Relative Gain contours
  - ❖ Boresight

*Shown in GIMS as (0), -2, -4, -6, -10 and -20 dB antenna relative gain contours and a boresight.*

*Shall contain both co-polar and cross-polar diagrams.*



# Article 4 Procedure

## 2. BR to examine and publish the Notice

- **Exchange to complete the Notice:**

- *BR and notifying Administration exchange to complete the notice if needed.*
  - *No reply within 30 days, the notice is considered as incomplete.*
  - *Reply after 30 days, the notice is given a new date of receipt.*

- **Examine the Notice:**

- *Identify affected administrations/networks using criteria in Annex 1 to Appendix 30/30A.*

- **Publish the Notice in a Part A Special Section:**

- *Information submitted by the Notifying Adm.*
- *List of affected administrations/networks*

# Annex 1 to Appendix 30/30A

- **Criteria to identify:**
  - **Affected administrations in Plan/List/Pending from the same Plan**
    - *EPM and PFD for Regions 1 and 3 Downlink; EPM for Regions 1 and 3 Feeder-link; OEPM for Region 2.*
    - *BR application: Mspace*
  - **Affected administrations in other Plan/List/Pending and Affected administrations in non-plan including guardbands**
    - *PFD in downlink and Delta T/T in feeder-link*
    - *BR application: GIBC/PFD(space serv.) and GIBC/Appendix 8*
  - **Affected administrations with terrestrial services**
    - *PFD*
    - *BR application: GIBC/PFD/EIRP GSO*

# Equivalent Protection Margin (EPM)

$$EPM = -10 \times \log \left( \sum_{i=1}^3 10^{(-M_i/10)} \right)$$

$$M_i = \text{protection margin} = \frac{C}{I_{i\text{aggr}}} - PR_i$$

where:

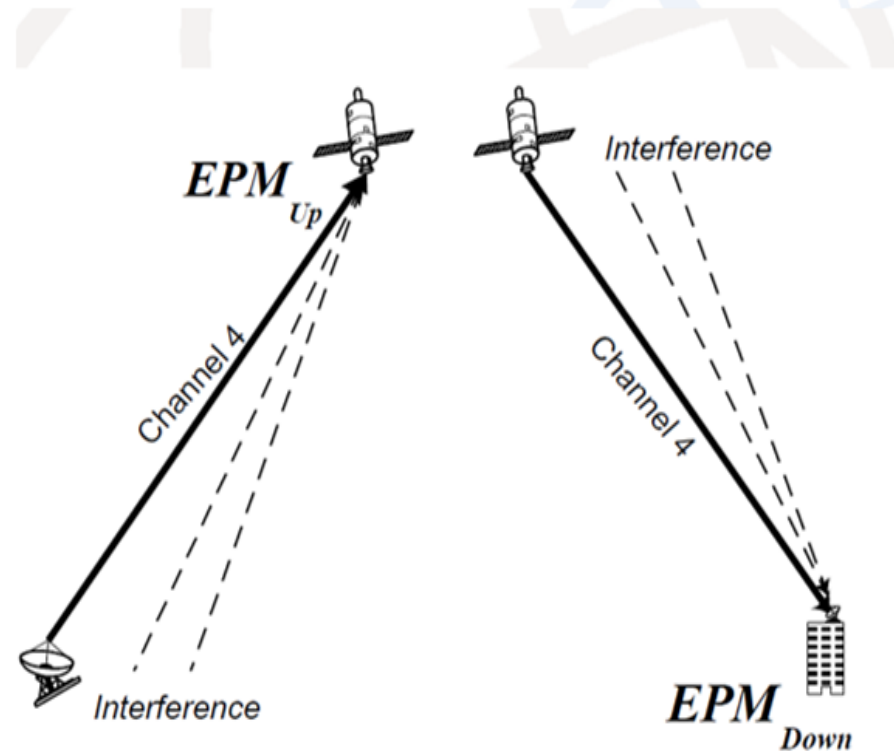
$i$  = interference type:

1 = co - channel

2 = upper first adjacent channel

3 = lower first adjacent channel

$PR_i$  = Protection Ratio for interference  $i$ .



Regions 1 and 3 Approach  
(separated links)

# Article 4 Procedure

## 3. Affected Adms to comment and Notifying Adms to coordinate

- **Affected Adms to comment:**

- *Affected administrations have 4 months from the date of relevant BR IFIC.*
- *When an incoming network is in Region 2*
  - *BR application to use: SpaceCOM*
  - *No comment within 4 months: **Agreed**.*
- *When an incoming network is in Regions 1 and 3*
  - *Send Telefax to the Bureau*
  - *No comment within 4 months: Disagreed. However, notifying Administration can ask assistance of the Bureau. **Agreed** if affected administrations still do not reply within 30 days from the beginning of assistance.*

- **Notifying Adms to coordinate:**

- *Carry out frequency coordination with affected administrations to obtain agreement (§4.1.16).*
- *Modify the Part A characteristics to reduce or avoid interference.*



# Article 4 Procedure

## 4. Notifying Adms to submit Final Characteristics to BR

- **Prepare the final characteristics:**
  - *Information to be submitted listed in Appendix 4*
  - *Use SpaceCap to introduce changes to SNS database*
  - *Use GIMS to introduce changes to GIMS data*
  - *Capture obtained agreement if any*
  - *Use SpaceVal to validate the filing*
  - *Contact BR for assistance if needed*
- **Submit the final characteristics to the BR:**
  - *Send the notice through E-submission system*

# Article 4 Procedure

## 5. BR to examine and, if OK, enter the Notice into Region 1&3 List

- **Exchange to complete the Notice:**
  - *BR and notifying Administration exchange to complete the notice if needed.*
    - *No reply within 30 days, the notice is considered as incomplete.*
    - *Reply after 30 days, the notice is given a new date of receipt.*
- **Examine the Notice:**
  - *Using criteria in Annex 1 to Appendix 30/30A to see if any agreement is still required and not provided*
- **Enter the Notice into the List**
  - *Through publication of a Part B Special Section.*

# Publications under Article 4 Procedure

- **Special Sections AP30-30A/E(Reg. 2), AP30/E and AP30A/E (Reg. 1&3)**
  - **Part A:** Publication of proposed characteristics and administrations considered affected
  - **Part D:** Establishment of requirements for agreement (**now only for Region 2**)
  - **Part B:** Final characteristics entered into the List in case of Regions 1 and 3 and into Plan in case of Region 2
  - **Part C:** Cancellation
- **Databases**
  - **SPS**\_ALL\_IFICnnnn, mspace\_results.mdb, GIMS Reference data (grefdbXXXX.mdb)

BR IFIC Publications

Databases

Preface

Cost Recovery

BR Software

BR Circular Letters

Special Sections

-- ALL --

AP30-30A/E

AP30/E

AP30A/E

API/A

API/B

CR/C

Parts I-S, II-S, III-S

-- ALL --

PART I-S

PART II-S

PART III-S

Administrations

-- ALL --

CHN

F

HOL

ISR

PNG

RUS

NEWS

SNS - Removal

Print instructions

**BR IFIC PUBLICATIONS – TABLE OF CONTENTS**

Print current list

Print publications in current list

Print Table of Contents

SPECIAL SECTION / PART	PLAN PART	RESPONSIBLE ADMINISTRATION		NAME OF THE SPACE STATION	ORB. POS.	NAME OF THE ASSOCIATED EARTH STATION	IDENTIFICATION NUMBER
		ADM.	INTERG. ORG.				
AP30/E/839	A	HOL		NSS-BSS-G3 57E	57		120552006
AP30/E/843	A	F		F-SAT-BSS-24.5W	-24,5		120552007
AP30/E/604	B	PNG		NEW DAWN BSS-2	60		112552010
AP30/E/601	B	RUS	IK	INTERSPUTNIK-74.9EB2	74,9		112552008
AP30/E/609	C	CHN		CHNBSAT-125.7E	125,7		112552014
AP30/E/607	C	ISR		AMS-BSS-C1-65E	65		112552013
AP30/E/481	C	F		F-SAT-E-BSS-80.5E	80,5		109552009
AP30/E/488	C	HOL		NSS-BSS 50.75E	50,75		109552008
AP30/E/484	C	F		F-SAT-E-BSS-88.5E	88,5		109552007



UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS  
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION  
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES  
OFICINA DE RADIOCOMUNICACIONES

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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATELITE		NSS-BSS-G3 57E		SECTION SPÉCIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º		AP30/E/839	
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	HOL	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	57 E	BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2930 / 29.09.2020		
NOTIFIÉ AU NOM DE NOTIFIED ON BEHALF OF NOTIFICADA EN NOMBRE DE				NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN		120552006	
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON / INFORMACIÓN RECIBIDA POR LA OFICINA EL						14.05.2020	

Identification of  
published  
network

Caractéristiques des assignations de fréquence publiées en application de l'Article 4 de l'Appendice 30 du Règlement des radiocommunications

Characteristics of frequency assignments published in application of Article 4 of Appendix 30 to the Radio Regulations

Características de asignaciones de frecuencias publicadas conforme al Artículo 4 del Apéndice 30 del Reglamento de Radiocomunicaciones

La présente Section spéciale concerne des propositions d'assignations nouvelles ou modifiées dans la Liste des liaisons descendantes pour les Régions 1 et 3 dans les bandes de fréquences 11,7-12,5 GHz en Région 1 et/ou 11,7-12,2 GHz en Région 3.

This Special Section concerns proposed new or modified assignments in the Regions 1 and 3 downlink List in the frequency bands 11.7-12.5 GHz in Region 1 and/or 11.7-12.2 GHz in Region 3.

Esta Sección Especial trata de las asignaciones propuestas nuevas o modificadas en la Lista de enlaces descendentes de las Regiones 1 y 3 en las bandas de frecuencias 11,7-12,5 GHz en la Región 1 y/o 11,7-12,2 GHz en la Región 3.

Elle comprend les Parties indiquées ci-dessous par une croix (X) dans la case appropriée.

It is composed of the Parts indicated below by an (X) in the relevant box

Se compone de las Partes indicadas a continuación con una (X) en la casilla pertinente.

<input checked="" type="checkbox"/> Partie A - Projets d'assignations nouvelles ou modifiées dans la Liste pour les Régions 1 et 3.	<input checked="" type="checkbox"/> Part A - Proposed new or modified assignments in the Regions 1 and 3 List.	<input checked="" type="checkbox"/> Parte A - Asignaciones propuestas nuevas o modificadas en la Lista de las Regiones 1 y 3.
<input type="checkbox"/> Partie B - Assignations nouvelles ou modifiées ajoutées à la Liste pour les Régions 1 et 3 en conséquence de l'application avec succès des dispositions de l'Article 4 de l'Appendice 30.	<input type="checkbox"/> Part B - New or modified assignments entered in the Regions 1 and 3 List as a result of the successful application of the provisions of Article 4 of Appendix 30.	<input type="checkbox"/> Parte B - Asignaciones nuevas o modificadas introducidas en la Lista de las Regiones 1 y 3 como resultado de la aplicación satisfactoria de las disposiciones del Artículo 4 del Apéndice 30.
<input type="checkbox"/> Partie C - Annulation d'une Section spéciale Partie A publiée ou assignations de fréquence annulées de la Liste des liaisons descendantes des Régions 1 et 3 conformément au § 4.1.3, à la note de bas de page 7 du § 4.1.5, à la note de bas de page 8 du § 4.1.15 et/ou § 4.1.23 de l'Article 4 de l'Appendice 30 ou Résolution 49 ou Résolution 548.	<input type="checkbox"/> Part C - Cancellation of a previously published Part A Special Section and/or frequency assignments cancelled from the Regions 1 and 3 List in accordance with § 4.1.3, footnote 7 to § 4.1.5, footnote 8 to § 4.1.15 and/or § 4.1.23 of Article 4 of Appendix 30 or Resolution 49 or Resolution 548.	<input type="checkbox"/> Parte C - Cancelación de una Parte A de la Sección Especial previamente publicada y/o de las asignaciones de frecuencia canceladas de la Lista de las Regiones 1 y 3, de conformidad con el § 4.1.3, la nota 7 del § 4.1.5, la nota 8 del § 4.1.15 y/o § 4.1.23 del Artículo 4 del Apéndice 30 o Resolución 49 o Resolución 548.

SOMIS AU TITRE DE  
SUBMITTED UNDER  
SOMETIDO CON ARREGLO A § 4.1.3

DATE LIMITE POUR LA RÉCEPTION DES COMMENTAIRES :  
EXPIRY DATE FOR THE RECEIPT OF COMMENTS :  
FECHA LIMITE PARA LA RECEPCIÓN DE LOS COMENTARIOS :

29.01.2021

Indication of  
corresponding Part

Expiry date for comment  
(i.e. 4 months from the date of BR IFIC)



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Affected Adms/networks identified by BR and included in a Part A Special Section

A1f1 Notif. adm.	A1f3 Inter. sat. org.	A1a Sat. Network / A1b Plan beam identification	BR6a Id. no.	A4a1 Orbital long.	BR45 Max. EPM/OEPM degradation	BR46 Max. PFD excess
App.30 Art.4, §§4.1.1 a) & 4.1.1 b) - Annexe 1, §1 App.30 Art.4, §§4.1.1 a) & 4.1.1 b) - Annex 1, §1 Ap.30 Art.4, §§4.1.1 a) & 4.1.1 b) - Anexo 1, §1 附录30第4条, 第4.1.1 a)段和 4.1.1 b)段 - 附件1, 第1段 Пр. 30 Ст. 4, пп. 4.1.1 а) и 4.1.1 б) – Дополнение 1, п. 1 الفقرتان 1.1.4 أ) و 1.1.4 ب) من المادة 4 من التذييل 30 - الفقرة 1 من الملحق 1						
BIH		BIH14800	100550032	56 E	22.301	30.79
CHN		CHN15500	100550041	62 E	3.914	5.87
		CHNA_100	100550045	62 E	4.409	5.82
		CHNBBSAT-62E-1	119552001	62 E	5.083	6.21
ETH		ETHIOSAT-1	116552010	58.3 E	16.776	29.00
F		AST-BSS-65.45E	113552012	65.45 E	1.758	0.33
G		AM-SAT AF3 BSS	103552010	51 E	7.615	4.02
		AM-SAT AF3 BSS MOD-A	109552024	51 E	1.874	3.77
		INTELSAT KUEXT 60E	96552015	60 E	21.059	17.74
HOL		NSS-BSS 50.5E	115552008	50.5 E	0.508	3.25
		NSS-BSS 60E	114552012	60 E	3.687	17.73
IND		INDA_100	100550103	55.8 E	26.042	29.69
		INDB_100	100550104	55.8 E	23.584	29.54
		INSAT-KUP-BSS (55.8E)	113552015	55.8 E	12.813	29.78
ISR		INSAT-KUP-BSS (55E)	113552003	55 E	20.330	25.25
		AMS-BSS-C2-65E	118552001	65 E	1.114	0.56
KAZ		KAZ06600	100550119	56.4 E	25.319	36.41
		KAZSAT-BSS-30-58.5E	117552004	58.5 E	20.830	27.65
KGZ		KGZ07000	100550121	50 E	1.787	2.04
MCO		MCO-BSS-52E	105552009	52 E	2.195	5.87
		MCO-BSS-52EB	116552029	52 E	0.817	6.17
MDA		MDA06300	100550139	50 E	0.497	1.81
MLD		MLD30600	100550144	50 E	1.307	2.41
		PACIFISAT BSS-61E	110552023	61 E	1.050	8.69
PNG		PACIFISAT BSSA-61E	112552006	61 E	1.355	8.66
		QATARSAT-BSS-64.5E	117552019	64.5 E	0.768	1.61
QAT		RST-2	100550174	56 E	29.579	30.88
RUS		RST-2A	108552012	56 E	32.576	31.03
		SMMSAT-BSS-1	115552015	55 E	22.179	25.22
SAE		EMARSAT-1	106552004	52.5 E	8.799	7.25
		YAHSAT-BSS2-57E	112552017	57 E	26.951	41.03
		YAHSAT-BSS2-60E	110552028	60 E	15.125	17.25
		YAHSAT-BSS2-63E	112552019	63 E	2.006	4.03
		YAHSAT-BSS3-60E	115552020	60 E	9.419	17.72
		YAHSAT-BSS3-63E	115552021	63 E	1.858	4.09
	YAHSAT-BSS4-60E	119552009	60 E	7.382	17.73	

AP30/E/839

## Radiocommunication Bureau Notes

### 1. Note relating to the identification of a notifying administration's own assignments

Where a notifying administration is acting on its own behalf, and not on behalf of a group of named administrations, it should be understood that whenever its own assignments are identified as being potentially affected in AP30/E/, AP30A/E/ and AP30-30A/E/ Special Sections under § 4.1.1 a), 4.1.1 b), 4.1.1 e), 4.2.3 c) or 4.2.3 e) of Appendix 30, 4.1.1 a), 4.1.1 b) or 4.2.2 c) of Appendix 30A, this identification is provided only for information. Responsibility for co-ordination between such assignments and the proposed assignments is an internal matter for the notifying administration.

### 2. Note relating to application of the grouping concept to networks grouped with networks in a Plan/List

Application of the grouping concept in Regions 1 and 3 is explained in Resolution 548 (Rev.WRC-12) and in Articles 11 and 9A of Appendices 30 and 30A respectively. In applying this concept, when calculating interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are included. Moreover, in accordance with *resolves* 5 of that Resolution and the Rule of Procedure relating to § 4.1.1 a) and 4.1.1 b) of Appendices 30 and 30A, in the identification of affected administrations, each network in a group is examined separately without taking into account the other networks in the group.

### 3. Note relating to the application of § 4.1.1 e), 4.2.3 e) and 4.2.3 f) of Appendix 30

The attention of administrations is drawn to the fact that, in its compatibility analysis, the Bureau has considered the applicable limits prescribed in sections 3 and 6 of Appendix 30 and the corresponding service area of the subject FSS or non-planned band BSS assignments as submitted by the responsible administrations. This implies that if a submitted service area covers both land and sea, the corresponding FSS or non-planned band BSS assignments are protected anywhere on land and at sea within the respective service area communicated to the Bureau by the responsible administrations. This fact may be taken into account in the evaluation of eventual interference during the coordination process between the concerned administrations.

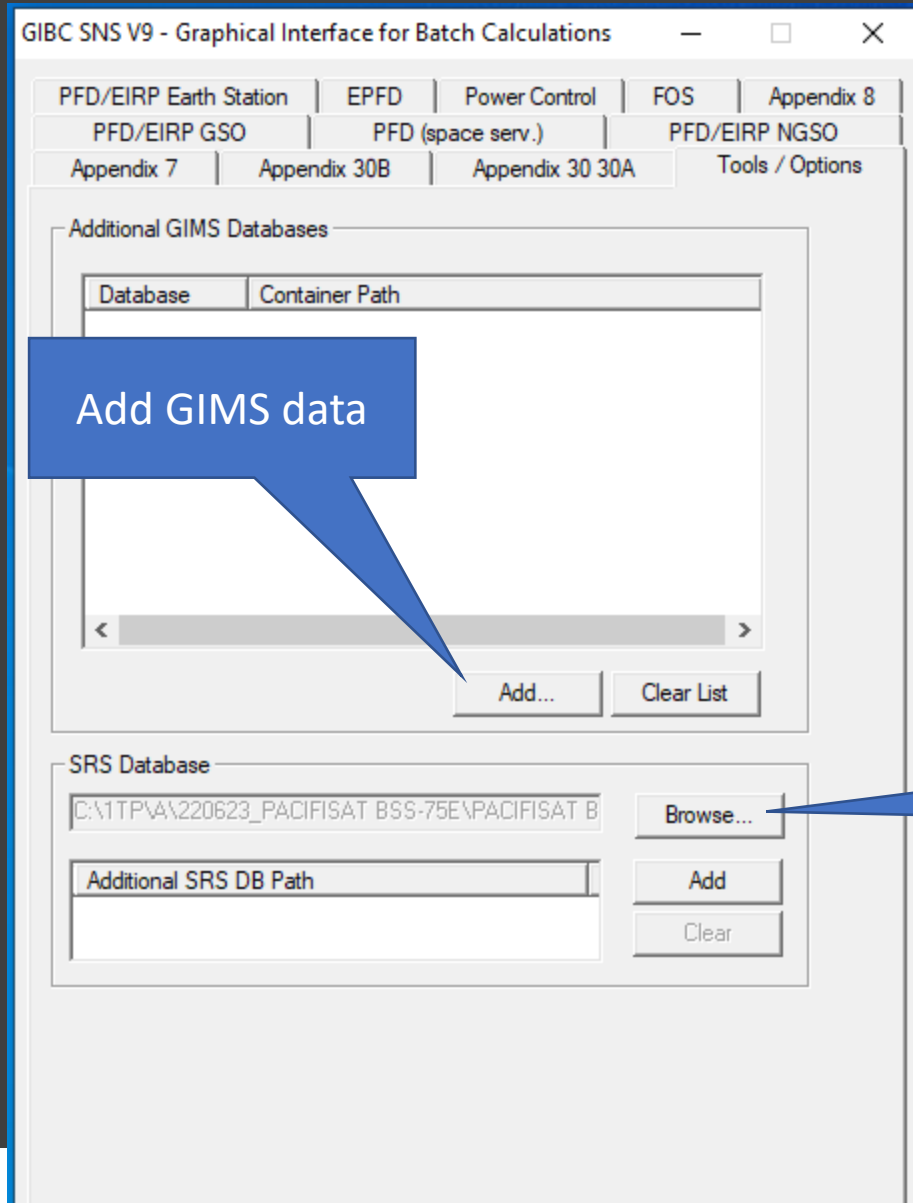
Clipboard Organize New

← → ▾ ↑ > This PC > br (\\blue\dfs) (M:) > BRIFIC\_BACKUP > 2020 > 2930 > Databases

Name	Date modified
2930	
anim3d	
BR_Soft	
Databases	
IFIC_Publications	
image	
index	
Support_Documents	
xml	
AP8	29.09.2020 2:56 PM
AP30-30A	29.09.2020 2:55 PM
AP30B	29.09.2020 2:56 PM
EPFD	29.09.2020 2:56 PM
GIMS_Data	29.09.2020 2:56 PM
IFIC_Archive	29.09.2020 2:56 PM
IFIC_Data	29.09.2020 2:56 PM
SpaceCom	29.09.2020 2:56 PM
SRS_Data	29.09.2020 2:56 PM



# GIBC/Appendix30 30A SAM >> GIBC



Add GIMS data

Connect to latest SPS\_ALL that contains the network you wish to check the limits.



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# GIBC/Appendix 30 30A

GIBC SNS V9 - Graphical Interface for Batch Calculations

PFD/EIRP Earth Station | EPFD | Power Control | FOS | Appendix 8  
PFD/EIRP GSO | PFD (space serv.) | PFD/EIRP NGSO  
Appendix 7 | Appendix 30B | Appendix 30 30A | Tools / Options

Network Id:  **Enter Notice ID** Start **Click Start**  
Cancel

Messages Filter: PFD Hard Limit Analysis  
 Progress  
 Warning  
 Debug  
Appendix 30 Annex 1 Section 1  
Appendix 30A Annex 1 Section 4

Message

Calculation Results

Open Database | View Log File | Open Folder

Version  
9.0.0.3 Appendix 30 30A

For both downlink and feeder-link networks in Regions 1 and 3, need to run twice; first for downlink and second for feeder-link.

Networks in Region 2 are not subject to this kind of limit check.

# Mspace

## SAM >> Mspace

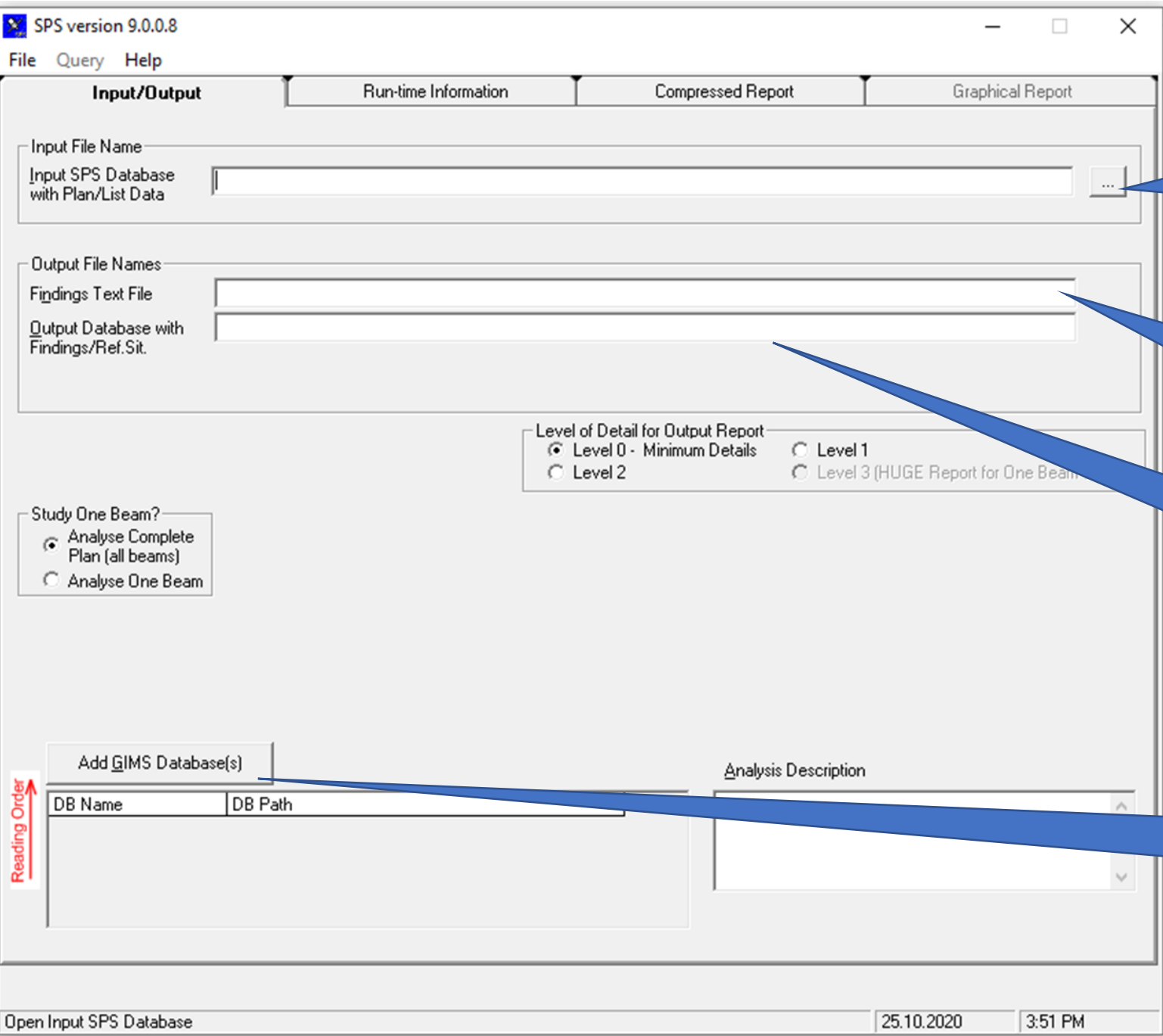
The screenshot shows the SpaceCapture V9 software interface. The main window is titled "Notice Explorer PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)". The interface includes a menu bar (File, Edit, Tools, Template, Window, Help), a toolbar, and a sidebar with navigation options like "Start Page", "Notice Explorer", "Open Notice", "New Notice", and "Search". The main area displays a table of notices with columns for Notice id, Type, Adm./Org, Orb. Pos., Station name, Date rcv., and Status. The table shows a list of notices from 120552009 to 120552036, all with a status of 24. A context menu is open over the first row, listing actions such as "Open Notice", "Show Selected Entity", "View History", "Print Notice", "Export Notice(s)", "Clone", "Delete", "Assign Notice Id", "ReNUMBER Notice Id", "Modify Notice Action Code", "Modify Date of Receipt", "Paginate Groups", "Sort Frequencies", "Delete Notice and Grp Links", "Create Notice Links", "Create Grp Links", "Create Regulatory Dates", "Cost recovery fee estimation (Council D482)", and "Prepare incoming notice for Mspace". A "Control Box" on the right contains buttons for "Show", "Clone", "Export", "Delete", "To SNS", "Validation", "Esub", and "RS49/552".

Notice id	Type	Adm./Org	Orb. Pos.	Station name	Date rcv.	Status
120552009 [A]	G	UGA/	26.6W	UGASAT	21.05.2020	24
120552010 [A]	G	NMB/			20	24
120552011 [A]	G	RRW/			20	24
120552012 [A]	G	MOZ/			20	24
120552013 [A]	G	SDN/			20	24
120552014 [A]	G	BOT/			20	24
120552015 [A]	G	ZMB/			20	24
120552016 [A]	G	KEN/			20	24
120552017 [A]	G	ZWE/			20	24
120552018 [A]	G	BEN/			20	24
120552019 [A]	G	TCD/			20	24
120552020 [A]	G	MWI/			20	24
120552021 [A]	G	GAB/			20	24
120552022 [A]	G	MLI/			20	24
120552023 [A]	G	TUN/			20	24
120552024 [A]	G	COG/			20	24
120552025 [A]	G	SOM/			20	24
120552026 [A]	G	TZA/			20	24
120552027 [A]	G	AFS/			20	24
120552028 [A]	G	SSD/			20	24
120552029 [A]	G	NIG/			20	24
120552030 [A]	G	DJI/			20	24
120552031 [A]	G	POL/			20	24
120552032 [A]	G	MKD/			20	24
120552033 [A]	G	MDA/			20	24
120552034 [A]	G	SWZ/			20	24
120552035 [A]	G	ARS/			20	24
120552036 [A]	G	SRB/			20	24

1. Import your network into an appropriate SPS\_ALL database by using SpaceCap.

2. Using SpaceCap functionality to set your network as an incoming notice for Mspace.

3. Do twice in case of Regions 1 and 3 downlink and feeder-link notices.



01. Connect to SPS\_ALL database that contains your incoming network which has been set as incoming for Mspace

02. Give a new Finding name or accept the one proposed by Mspace

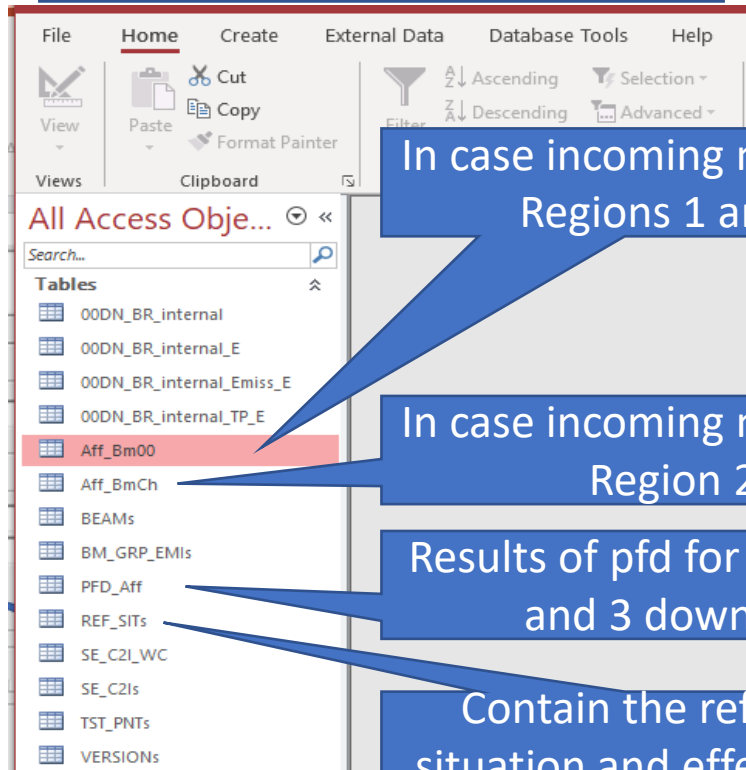
03. Give a new Output name or accept the one proposed by Mspace. This contains output of Mspace analysis

04. Add GIMS data(s). Please respect the order should you connect to more than one GIMS database!



# View Mspace output results

Open directly with Ms Access



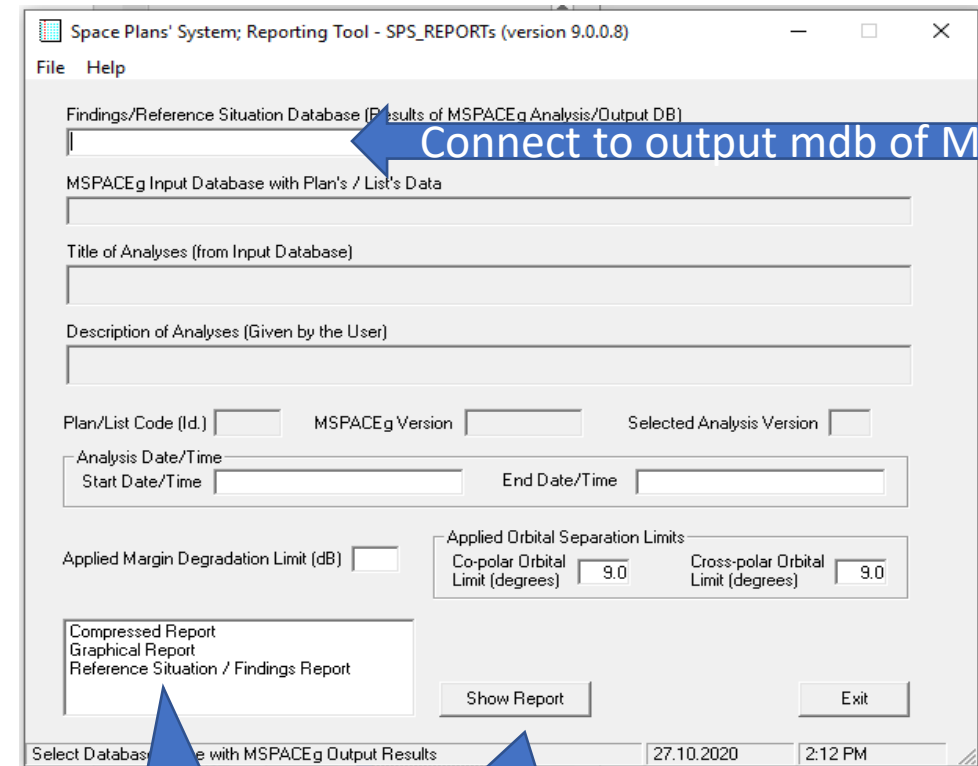
In case incoming network in Regions 1 and 3

In case incoming network in Region 2

Results of pfd for Regions 1 and 3 downlink

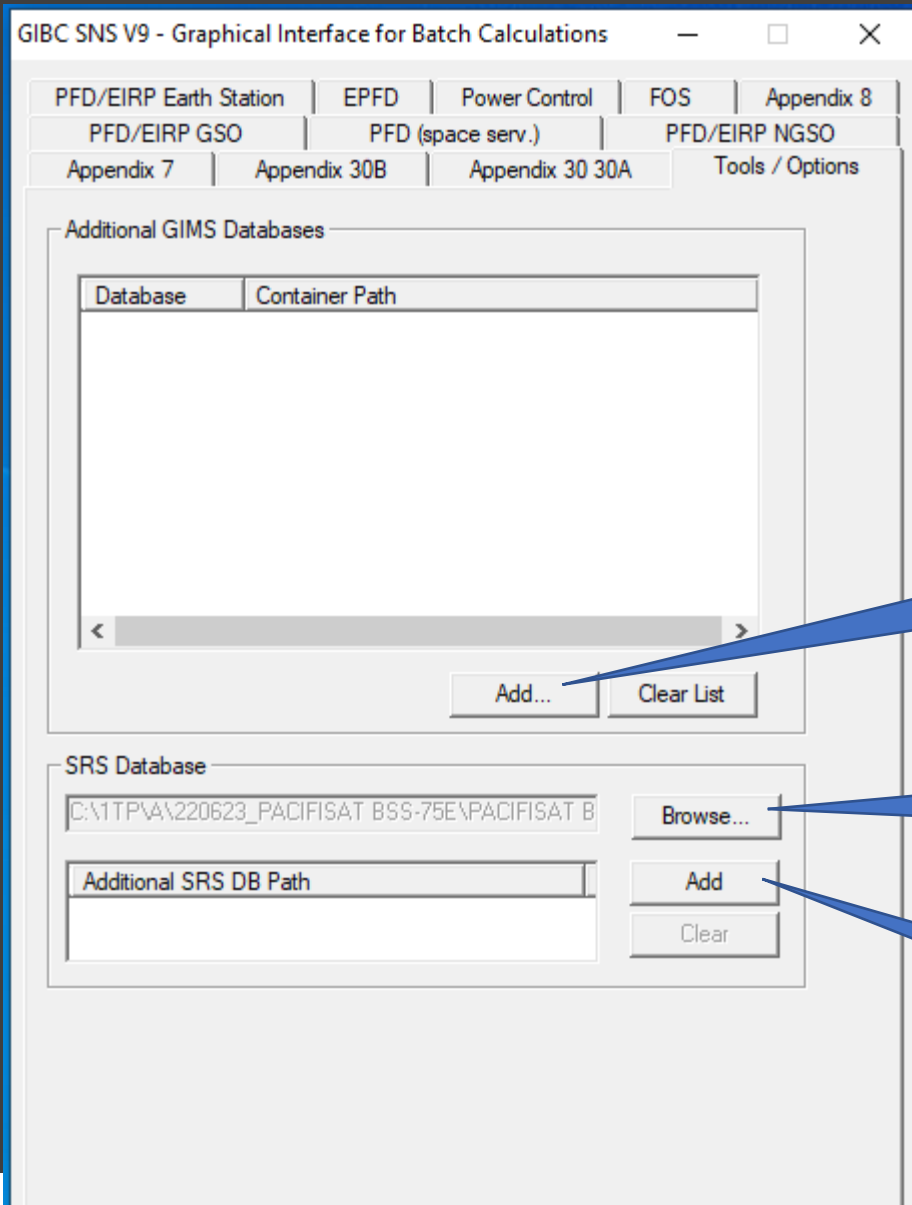
Contain the reference situation and effect due to incoming network

Use SPS\_REPORTs from SAM



Connect to output mdb of Mspace

Select the report and click "Show Report"



GIBC/PFD/EIRP GSO, GIBC/PFD(space serv.) and GIBC/Appendix 8

SAM >> GIBC

Set-up databases and GIMS data

01. Add GIMS data

02. Connect to SPS\_ALL database that contains the network you wish to examine

03. Connect to SRS\_ALL database of non-plan networks

# GIBC/PFD (space serv.)

GIBC SNS V9 - Graphical Interface for Batch Calculations

PFD/EIRP Earth Station | EPFD | Power Control | FOS | Appendix 8  
Appendix 7 | Appendix 30B | Appendix 30 30A | Tools / Options  
PFD/EIRP GSO | PFD (space serv.) | PFD/EIRP NGSO

PFD Trigger limits with respect to other space services

Network:  **01. Enter Notice ID** Start **03. Click Start**

Examination Data

Output Level:   
Power Control (dBW):  Findings Level:

Existing

Check Against Existing Administration ID:   
Transaction ID:  Sat. Network Symbol:

"Before" Examination

Perform "Before" Comparisons  Appendix 30 Art.4.1.11

Previous Networks:

Files Path

C:\Users\phamviet\ITU\BR\_SPACE\_v9.0\TEX\_RESULTS\PXT\

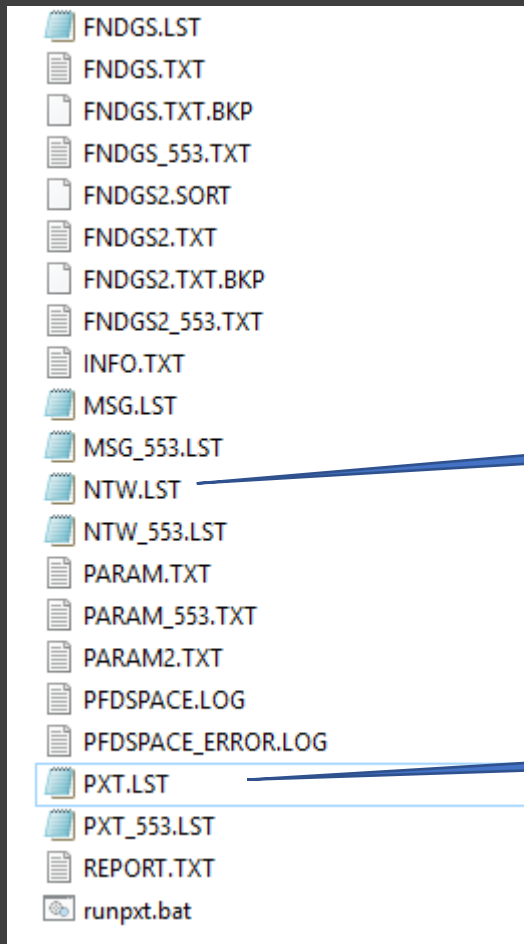
Open Folder

02. Select option as the case may be. Otherwise leave them unchecked.

- "Before" Comparisons: if incoming network is located at the same position as Plan assignment of that notifying administration.
- Appendix 30 Art.4.1.11: Check if Part B increases more interference to other networks than the corresponding Part A. Use for Part B examination.

## Output folder of GIBC/PFD

# GIBC/PFD (space serv.)



List of affected administrations/networks

Results of calculation



# GIBC/Appendix 8

GIBC SNS V9 - Graphical Interface for Batch Calculations

Appendix 7 | Appendix 30B | Appendix 30 30A | Tools / Options

PFD/EIRP GSO | PFD (space serv.) | PFD/EIRP NGSO

PFD/EIRP Earth Station | EPFD | Power Control | FOS | Appendix 8

Network  Start

9.41 Examination Outside of the Coordination Arc  
(Please enter Adm/NetworkOrg below)

Filtering Existing Networks

Network  Adm

Year - Month - Date    Network Org

Message

Results

View Results | Report File | Open Folder | Log File | Database

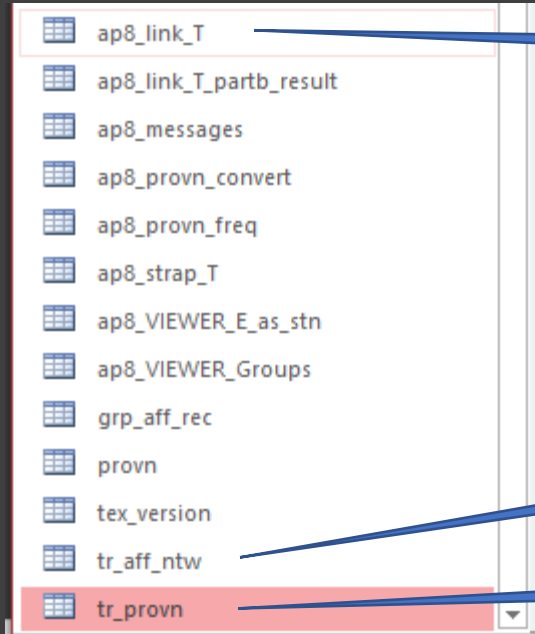
01. Enter Notice ID

02. Click Start



View results of GIBC/Appendix 8 in Ms Access

# GIBC/Appendix 8



Results of calculation

List of affected networks

List of affected administrations

GIBC/Appendix 8 also contains a reporting tool.

# GIBC/PFD/EIRP GSO

GIBC SNS V9 - Graphical Interface for Batch Calculations

Appendix 7 | Appendix 30B | Appendix 30 30A | Tools / Options

PFD/EIRP Earth Station | EPFD | Power Control | FOS | Appendix 8

PFD/EIRP GSO | PFD (space serv.) | PFD/EIRP NGSO

PFD/EIRP limits applicable to GSO network

Network: [ ] Start

Examination Options

Examination: Triggers

Power Control (dBW): [ ]

Worst Case Only

Messages Filter

Progress

Before "Examination"

Perform "Before" Comparisons

Appendix 30 Art.4.1.11

Add [ ] Delete

Clear All

Message

Calculation Results

Open Database | View Log File | Open Folder | Open Report

01. Enter Notice ID

02. Select option as the case may be. Otherwise leave them unchecked.

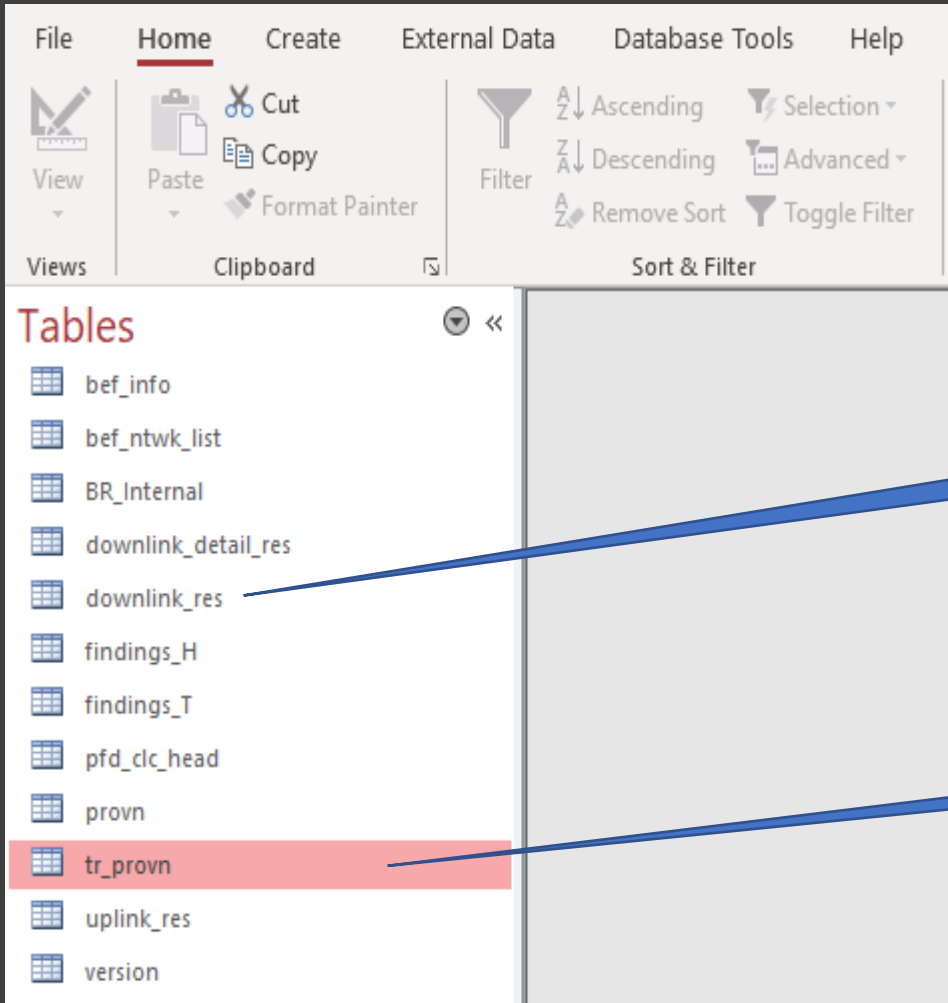
03. Click Start

Select "Triggers"

02. Select option as the case may be. Otherwise leave them unchecked.

- "Before" Comparisons: if incoming network is located at the same position as Plan assignment of that notifying administration.
- Appendix 30 Art.4.1.11: Check if Part B increases more interference to other networks than the corresponding Part A. Use for Part B examination.

## View results of GIBC/PFD/EIRP GSO in Ms Access



# GIBC/PFD/EIRP GSO

Results of pdf calculation

List of affected administration/territory

# Affected based on EPM or OEPM

EPM in Regions 1 and 3		
Current EPM (dB)	New EPM (dB)	
10	$\geq -0.45$	Not affected
10	$< -0.45$	Affected
-10	$\geq -10.45$	Not affected
-10	$< -10.45$	Affected

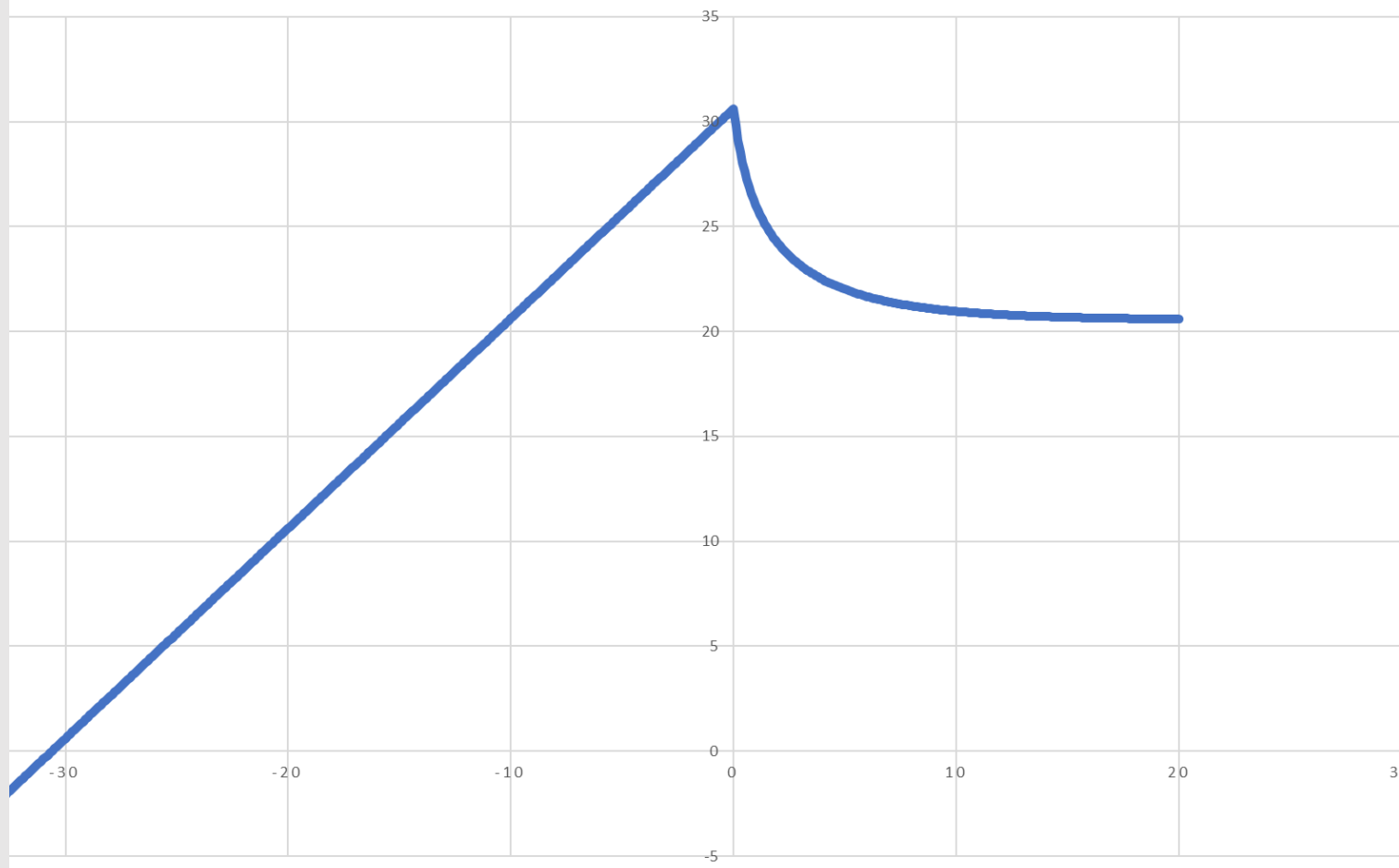
  

OEPM in Region 2		
Current OEPM (dB)	New OEPM (dB)	
10	$\geq -0.25$	Not affected
10	$< -0.25$	Affected
-10	$\geq -10.25$	Not affected
-10	$< -10.25$	Affected

0.45 dB tolerance

0.25 dB tolerance

## EPM CRITERION IN TERMS OF C/I DUE TO INTERFERENCE FROM INCOMING NETWORK



1. EPM or OEPM around 0 dB, an assignment is most sensitive to interference. i.e. just a small amount of interference received could trigger that assignment as affected in the Bureau's examination.
2. The more positive EPM or OEPM, the less sensitive to interference but the assignment is still protected.
3. The more negative EPM or OEPM, the less sensitive to interference but the assignment may no longer be protected.

# How much degradation more than 0.45/0.25 dB you may accept in the coordination?

0.45 dB tolerance in Regions 1 and 3

0.25 dB tolerance in Region 2

It depends on your administration's intention to use your assignments. A link budget should be calculated to verify the C/(N+I).

Overall Required C/(N+I) (dB)	8	C/N Downlink with Rain											
C/N Feeder-link (dB)	30												
EPM Feeder-link (dB)	-5												
C/N Downlink with Rain (dB)	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14
EPM Downlink (dB)													
0	-0.399	0.055	0.503	0.946	1.383	1.814	2.237	2.653	3.06	3.458	3.846	4.224	4.591
-1	-0.45	-0.002	0.441	0.877	1.307	1.729	2.144	2.55	2.947	3.335	3.712	4.078	4.432
-2	-0.514	-0.072	0.363	0.791	1.212	1.625	2.029	2.424	2.81	3.184	3.548	3.9	4.24
-3	-0.592	-0.159	0.267	0.685	1.095	1.497	1.889	2.271	2.642	3.002	3.35	3.686	4.009
-4	-0.689	-0.266	0.149	0.555	0.953	1.341	1.719	2.085	2.44	2.783	3.114	3.431	3.735
-5	-0.808	-0.398	0.005	0.397	0.78	1.152	1.513	1.862	2.199	2.523	2.833	3.13	3.412
-6	-0.954	-0.557	-0.17	0.206	0.572	0.926	1.268	1.597	1.913	2.215	2.504	2.778	3.02
-7	-1.13	-0.75	-0.381	-0.023	0.323	0.657	0.977	1.284	1.578	1.857	2.122	2.372	2.60
-8	-1.343	-0.982	-0.632	-0.295	0.029	0.34	0.637	0.92	1.189	1.444	1.684	1.91	2.122
-9	-1.596	-1.256	-0.929	-0.615	-0.315	-0.028	0.244	0.502	0.745	0.974	1.189	1.39	1.578
-10	-1.896	-1.579	-1.276	-0.987	-0.712	-0.452	-0.206	0.026	0.244	0.447	0.637	0.814	0.977
-11	-2.246	-1.954	-1.677	-1.415	-1.166	-0.932	-0.712	-0.507	-0.315	-0.136	-0.029	0.182	0.323
-12	-2.649	-2.385	-2.135	-1.899	-1.677	-1.47	-1.276	-1.096	-0.929	-0.775	-0.632	-0.501	-0.381
-13	-3.109	-2.872	-2.649	-2.44	-2.246	-2.064	-1.896	-1.74	-1.596	-1.464	-1.343	-1.232	-1.13
-14	-3.627	-3.417	-3.221	-3.038	-2.869	-2.712	-2.568	-2.435	-2.313	-2.201	-2.099	-2.005	-1.921
-15	-4.201	-4.018	-3.848	-3.69	-3.545	-3.411	-3.288	-3.176	-3.073	-2.979	-2.894	-2.817	-2.747
-16	-4.831	-4.673	-4.527	-4.392	-4.269	-4.156	-4.053	-3.959	-3.873	-3.795	-3.725	-3.661	-3.603
-17	-5.512	-5.377	-5.253	-5.14	-5.036	-4.942	-4.856	-4.778	-4.707	-4.643	-4.585	-4.533	-4.486
-18	-6.241	-6.127	-6.024	-5.929	-5.843	-5.764	-5.693	-5.629	-5.571	-5.518	-5.471	-5.429	-5.39
-19	-7.013	-6.918	-6.832	-6.753	-6.682	-6.618	-6.559	-6.507	-6.459	-6.417	-6.378	-6.344	-6.313
-20	-7.823	-7.745	-7.673	-7.609	-7.55	-7.498	-7.45	-7.407	-7.369	-7.334	-7.303	-7.275	-7.25

C/(N+I) – Required C/(N+I)



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