TUWRS **GENEVA2024**

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Introduction to BSS & FSS Plans



ITU Constitution Articles 44 and 45

- Radio frequencies and any associated orbits are limited natural resources
- Must be used rationally, efficiently and economically in conformity with the Radio Regulations (RR)
- To have equitable access to those resources
- Not to cause harmful interference to services operating in accordance with the RR

Two Different Approaches

Coordination

First come, first served based on current requirements

Efficient /economical

Late comers may not have access to (the early users have consumed all

Plan

Distribution of resources based on current and future requirement

✤ Equitable access



To guarantee equitable access, it is based on a reservation of capacity for future use by the ITU Member States

Not all Planned resources are currently in operation, BUT will not be cancelled and are protected from harmful interference from other networks

Two Space Plans in RR

Broadcasting-Satellite Service and Feeder-link Plans (Appendix 30/30A)

11.7-12.2 GHz (Region 3)
11.7-12.5 GHz (Region 1)
12.2-12.7 GHz (Region 2)



17.3-18.1 GHz (Region 1&3)
17.3-17.8 GHz (Region 2)
14.5-14.8 GHz (Region 1&3 except Europe)

Fixed Satellite Service Plans (Appendix 30B)





Appendix 30

- Article 10: Plan for BSS in Region 2
- Article 11: Plan for BSS in Regions 1 &3

Appendix 30A

- Article 9: Plan for feeder links in region2
- Article 9A: Plan for feeder links in Region 1 &3

Appendix 30B

• Article 10 : Plan for FSS



Article 10 of AP30

Beam Name	Orbital Position		Boresight Coordinates		Antenna Beamwidth				Max. EIRP			
									12 224.00 MHz (1)			
1	2	3	√ 4		5 V		6	7	^v 8	9		
ALS00002 ALS00003 ARGINSU4 ARGSUR04 B CE311 B CE312 B CE411 B CE412 B CE412 B CE511 B NO611 B NO611 B NO611 B NO611 B NO711 B SU111 B SU112 B SU112 B SU211 B SU212	-166.20 -175.20 -94.20 -94.20 -64.20 -64.20 -64.20 -64.20 -74.20 -74.20 -74.20 -74.20 -81.20 -81.20 -81.20 -45.20		-149.66 -150.98 -52.98 -65.04 -40.60 -40.27 -50.97 -50.71 -53.10 -59.60 -60.70 -68.76 -51.12 -50.75 -44.51 -44.00	58.37 58.53 -59.81 -43.33 -6.07 -6.06 -15.27 -15.30 -2.90 -11.62 -1.78 -4.71 -25.63 -25.62 -16.95 -16.95	3.76 3.77 3.40 3.32 3.04 3.44 3.86 3.57 2.44 2.85 3.54 2.37 2.76 2.47 3.22 3.20	1.24 1.11 0.80 1.50 2.06 2.09 1.38 1.56 2.13 1.69 1.78 1.65 1.05 1.48 1.36 1.48	170 167 19 40 174 174 49 52 104 165 126 73 50 56 60 58	$ \begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2 \\ 1 \\ $	59.7 60.0 59.9 60.7 61.6 61.0 62.6 62.7 63.0 62.8 62.8 62.8 62.8 62.8 62.8 62.8 62.8	9/GR1 9/GR2 9/GR3 9/GR3 8 9/GR7 8 9/GR9 8 9/GR9 8 9/GR9 8 9/GR8 8 9/GR8 8 9/GR8 8 9/GR8 8 9/GR8 8 9/GR8 8 9/GR9 8 9/GR9 8 9/GR9	10 10 10 10 10 10 10 10 10 10 10	
BAHIFRB1 BERBERMU BERBER02 BOLAND01 CAN01101 CAN01201 CAN01202	-43.20 -87.20 -96.20 -31.00 -115.20 -138.20 -138.20 -72.70		-76.06 -64.77 -64.77 -65.04 -125.63 -112.04 -107.70	-10.87 24.16 32.32 -16.76 57.24 55.95 55.63	1.81 0.80 2.49 3.45 3.35 2.74	1.90 0.80 0.80 1.27 1.27 0.97 1.12	142 90 90 76 157 151 32	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	61.6 56.8 56.9 67.9 59.5 59.6 59.6	2 9/GR5 9/GR10 9/GR10	10 10 10	

Space Plans features (1)

To guarantee equitable access, the beams cover the national territory of each Administration:

National service area

National coverage (minimum beams)



Space Plans features (2)

To use the space resources rationally, efficiently and economically, the Aggregate C/I method is used to identify potential interference.





Space Plans features (3)

Protection from harmful interference is provided based on the Plan characteristics and NOT on the characteristics entered into the Master Register at notification stage. This is different for networks operating in the non-plan frequency bands.



Space Plans features (4)

Standard parameters (assumptions) are used to ensure equity amongst Administrations and possible future use

- Same amount of frequency for each beam
- ✤ Elliptical beam using defined space station antenna pattern
- ✤ Defined C/N

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- ✤ Same values of system noise temperature
- Similar power level
- ✤ Defined earth station antenna size and pattern

BSS Plans and FSS Plan Some distinct features

BSS Plans (Appendix 30/30A)

- Plans separated by Regions
- Assignments Plans
- Shared with other space services in other Regions
- List for R1&3 only
- Cluster concept in Region 2 Plan

FSS Plan (Appendix 30B)

- \clubsuit Worldwide plan
- Allotment Plans (conversion to assignments before use)
- ✤ List for all 3 regions
- Protection based on grid points in service areas for downlinks



AP30/30A BSS Plan Procedure

AP30B FSS Plan Procedure



Article 6 of AP30B Article 8 of AP30B



Time limits for Plans

Appendix 30/30A

8 years for completing provisions of Articles 4&5 of AP30/30A: inclusion in the Plan/List, bringing into use (BIU) .

RES 49 information within **30 days** after BIU date limit.

Confirmation of BIU within 90 days.

4 months for comments after publication. Bringing back into use within **3 years** after suspension of Region 1&3 List assignments.

15 years operation for R1&3 List.

Appendix 30B

8 years for completing provisions of Articles 6&8 of AP30B: inclusion in the Plan/List, bringing into use (BIU).

RES 49 information within **30 days** after BIU date limit.

Confirmation of BIU within 90 days.

4 months for comments after publication. Bringing back into use within **3 years** after suspension.

Space Plans, a long HISTORY

- •WARC-77 established the Region 1&3 BSS Plan
- •RARC-83 established the Region 2 BSS and associated feeder-link Plan
- •WARC ORB-85 included the Region 2 BSS and associated feeder-link Plan into the Radio Regulations
- •WARC ORB-88 established the FSS Plan and Region 1 &3 BSS feeder-link Plan
- •WRC-97 revised the Region 1&3 BSS and associated feeder-link Plans
- •WRC-2000 revised the Region 1&3 BSS and associated feeder-link Plans
- •WRC-07 revised the FSS Plan standard parameters, procedure and protection criteria
- WRC-12, WRC-15 and WRC-19 Revised provisions in order to improve the procedures and consider the development of technology
- WRC-19 approved Resolution170 and Resolution 559

Modifications to Plans Made by WRC-23

Application of RES.559

- Approve 40 new entries in AP30/30A Plans in replacement of 40 corresponding degraded entries;
- Addition of one new entry for a new ITU Member States ;

MOD to AP30B Plan

 Addition of 8 new entries in the AP30B Plan and one allotment is modified consequently

Some Modifications to Provisions made by WRC-23

- Resolution 121: Use of 12.75-13.25 GHz (one of AP30B Bands) by earth stations in motion (ESIM) on aircraft and vessels
- Modification to Article 7 of AP30B (with an addition of new Annex) to facilitate the new Member States to obtain new allotments in the FSS Plan
- New provisions in AP30A (R1&3) for excluding territory of an objecting Administration from feeder-link service area of a network with possible relocation of feeder-link test-points
- New provisions in AP30A/AP30B to enhance the frequency compatibility in feeder-link/uplink
- Introduction of a "Special Agreement" mechanism to ensure the protection of assignments/allotments in the AP30/30A (R1&3) and AP30B Plans, and to provide possibility to restore degraded reference situation of an allotment in the AP30B Plan (Resolution 126)

Details see presentation "Modifications made by WRC-23 to Planned services and relevant new RoPs " in WRS-24 Workshop

General information relating to Space Plan services:

http://www.itu.int/ITU-R/go/space-plans/en

Thank you!

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