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Considerations to be taken into account when preparing your Part A and Part B submissions under AP30B

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Items to be considered (1)

For both Part A and Part B submissions

- Network Configuration
- Exclusive operation code
- Alignment of coverage and service area
- Test-Points
  - *Alignment of test point location and service area*
  - *Different sets of test points for same service area*
  - *Different service areas but same set of test points*
  - *Test points in disputed areas*
  - *Distribution and number of test points*
- Irrealistic gain contours
- Irrealistic combination of Earth Station diameter and power density

Items to be considered (2)

Specific for Part B submission

- More than one power density for Earth Station for the same beam and the same geographical area
- Submission of service area including sea

Network Configuration (1)

The Bureau observes that administrations often submit the following network configurations :

1. More than 3 earth station antennae per beam
2. More than 2 power densities associated to each earth station
3. Several beams covering different regions but combination makes up a global coverage.
4. Several global beams with different service area.

Without diminishing the capacity of the network and flexibility during the coordination, the Bureau proposes the following network configurations and that is accepted by the notifying Administration.

- **for Part A submission:** 1 beam and 1 service area for each band with
  - a maximum of three Earth Station (smallest, medium and biggest)
  - a maximum of 2 power densities per Earth Station (smallest and biggest).
- **for PartB submission:** number of power densities per Earth Station shall be limited to 1.

Network Configuration (2)

Proposed network configuration will also help to keep the size of GIBC/Appendix 30B output database below the limit of Ms Access (2 GB) and speed-up the processing of the Bureau.

Network Configuration (3)

Multiple Earth Stations/Power Densities

3 Earth Stations (ES) and 3 power densities for each ES

Beam/E_R	Frequency Band	ES antenna gain [dBi]	Power density [dBW/Hz]
ABC/E	4500-4800 MHz	37	-65.0, -60.0, -55.0
		39	-65.0, -60.0, -55.0
		42	-65.0, -60.0, -55.0
		45	-65.0, -60.0, -55.0
ABC/R	6725-7025 MHz	47.4	-48.0, -43.0, -40.0
		48	-48.0, -43.0, -40.0
		50	-48.0, -43.0, -40.0
		52.3	-48.0, -43.0, -40.0

Bureau' s proposal : 3 ES and 2 power densities per ES (Part A submission)

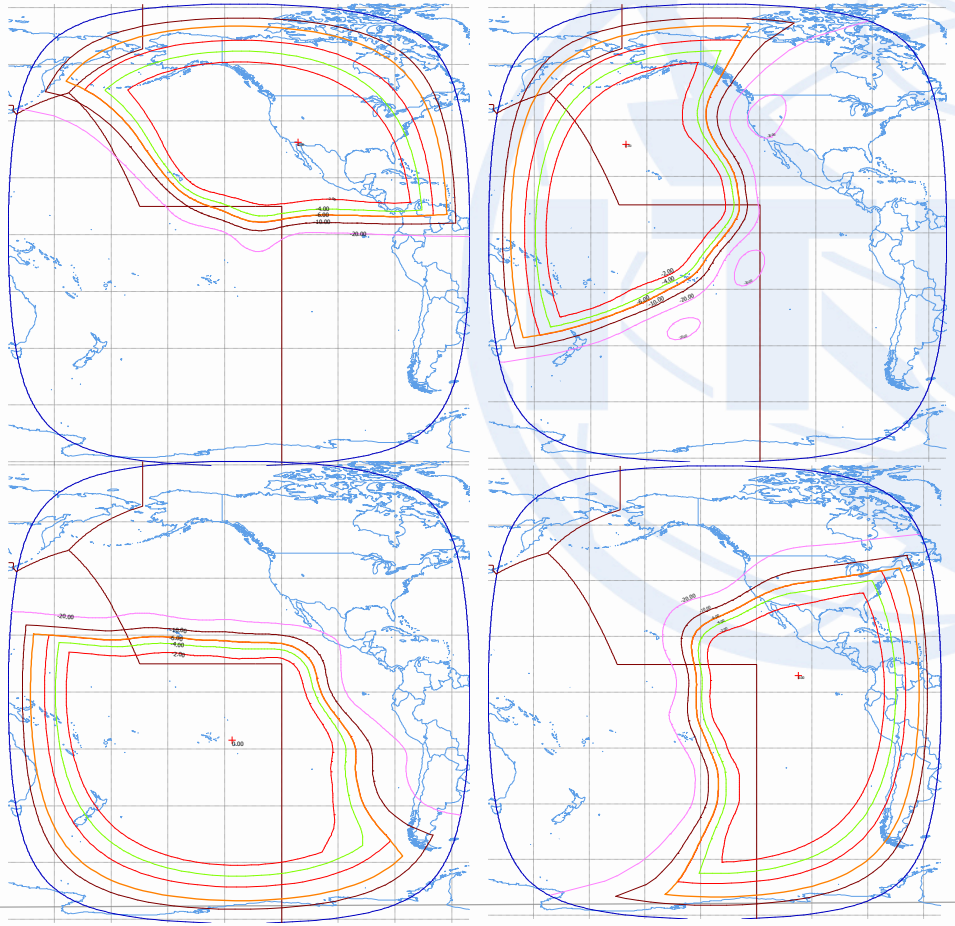
Beam/E_R	Frequency Band	ES antenna gain [dBi]	Power density [dBW/Hz]
ABC/E	4500-4800 MHz	37	-65.0, -55.0
		42	-70.0, -60.0
		45	-70.0, -60.0
ABC/R	6725-7025 MHz	47.4	-48.0, -40.0
		50	-48.0, -40.0
		52.3	-48.0, -40.0

The assignments proposed for deletion are within the envelope of the remaining ones. For further Part B submission no change in flexibility.

Network Configuration (4)

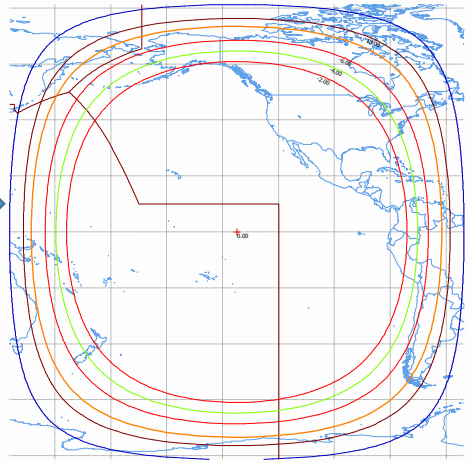
Several Regional Beams

Submitted configuration



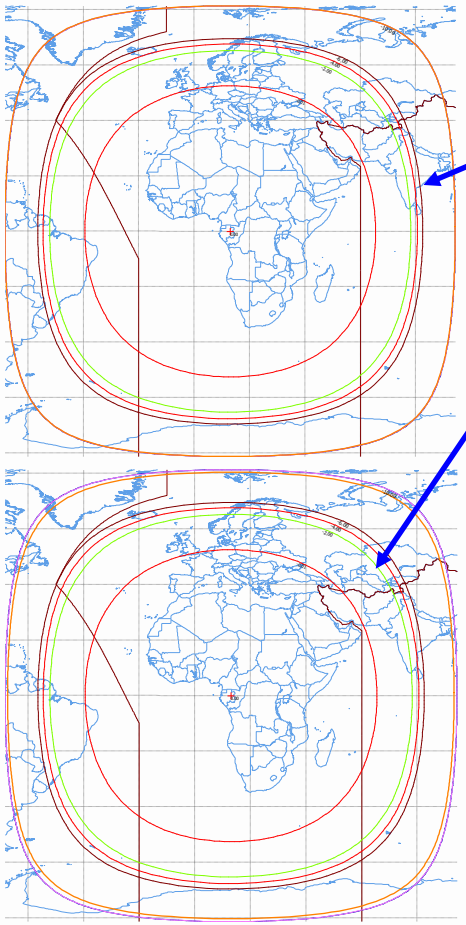
These four beams can be merged in one without any lost in flexibility for the notifying administration

Configuration proposed by the Bureau

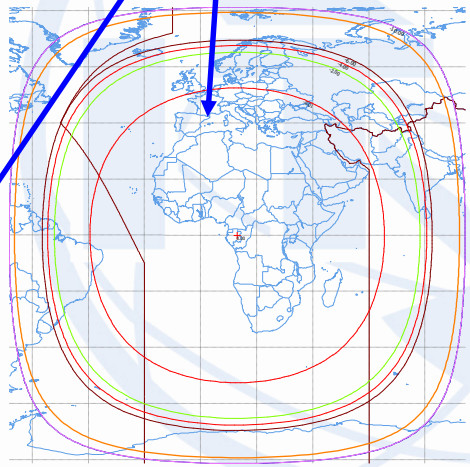


Network Configuration (5)

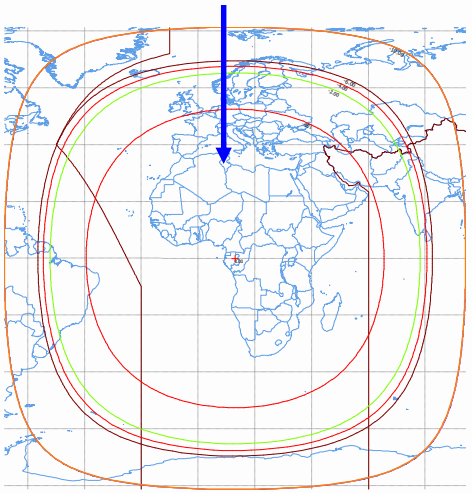
Several Global Beams



Submitted configuration
3 global beams and service areas



Configuration proposed by the Bureau: 1 global beam and 1 service area



All possible different configurations are allowed in corresponding Part B submission

Exclusive operation code (1)

When:

- an incoming network has more than one frequency group per band and these groups don't work simultaneously, and/or
- two or more networks are at the same orbital position with frequency overlap and they don't operate simultaneously.

the notifying Administration **should submit** an exclusive operation code in order

- not to severely degrade the reference situation of that incoming network and other networks, if any, in the same grouping and thus not diminish their protection and
- not to overestimate interference to others by taking only the worst case in the calculation of C/I aggregate.

Exclusive operation code (2)

How to submit:

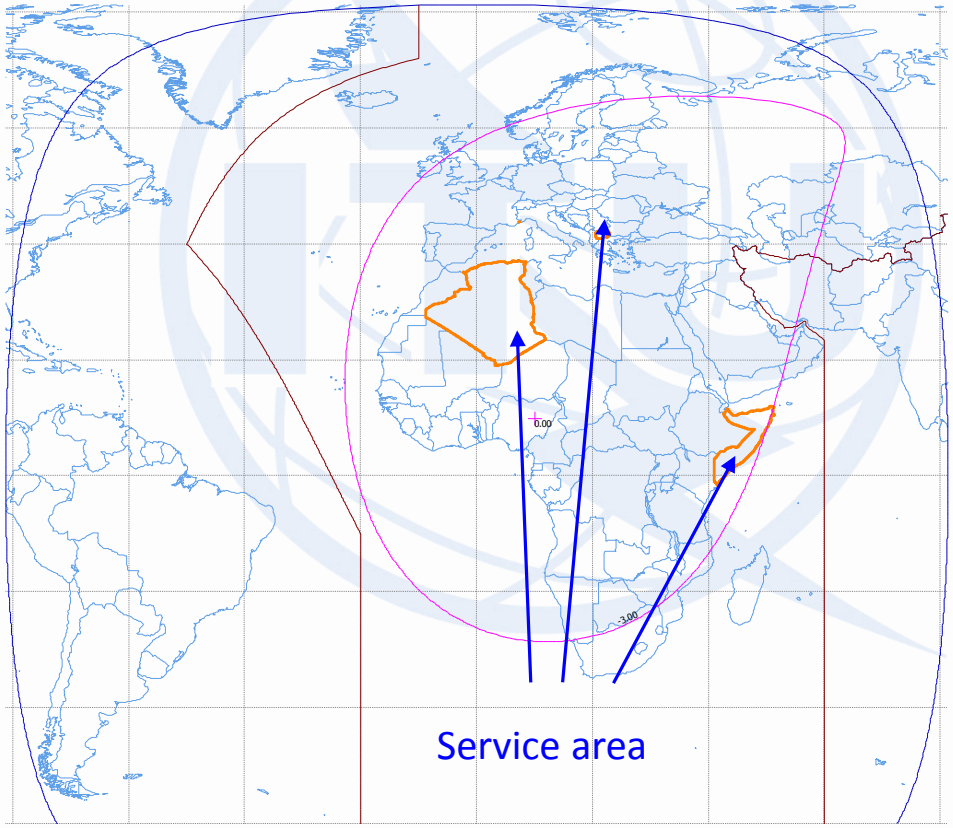
- If grouping is only among assignments of the incoming network, an exclusive operation code «999» should be captured in the submission.
- If grouping is with networks already published by BR to form a new grouping, the notifying administration should indicate this request in the cover letter of the submission or a note to the submission.
- If grouping is with networks already having an exclusive operation code, that code should be captured in the submission.
- In addition, if grouping is with networks belonging to other administrations, written agreement of those administrations has to be attached to the submission.

NOTE:

Grouping at different orbital positions is allowed only in case of a conversion of an allotment to an assignment at another orbital position, or in case of modification of the orbital position of an assignment.

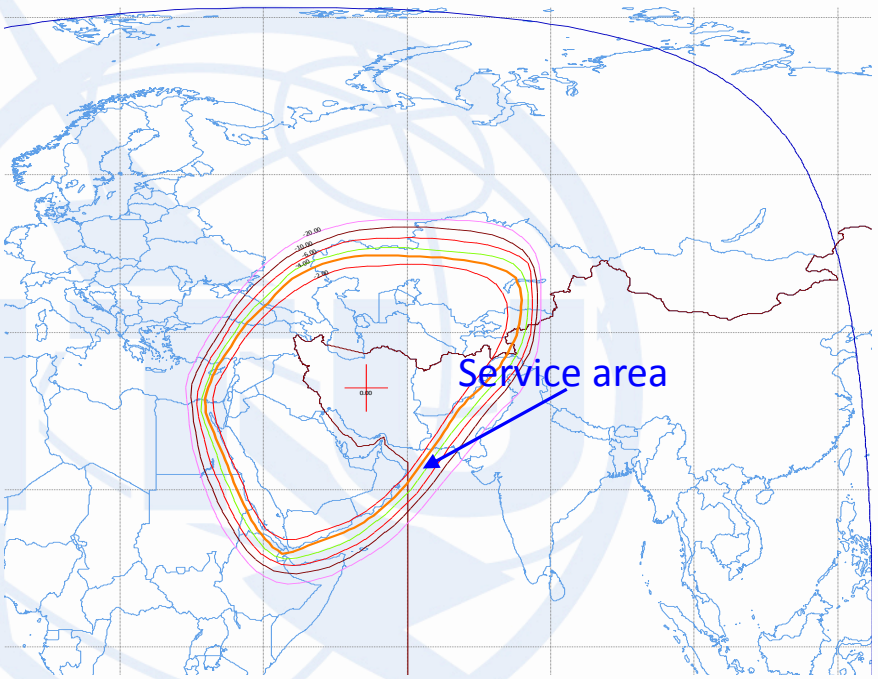
Alignment of coverage and service areas (1)

In order to reduce to the maximum extent the impact over the territories not included in the service area, coverage and service areas should be aligned.



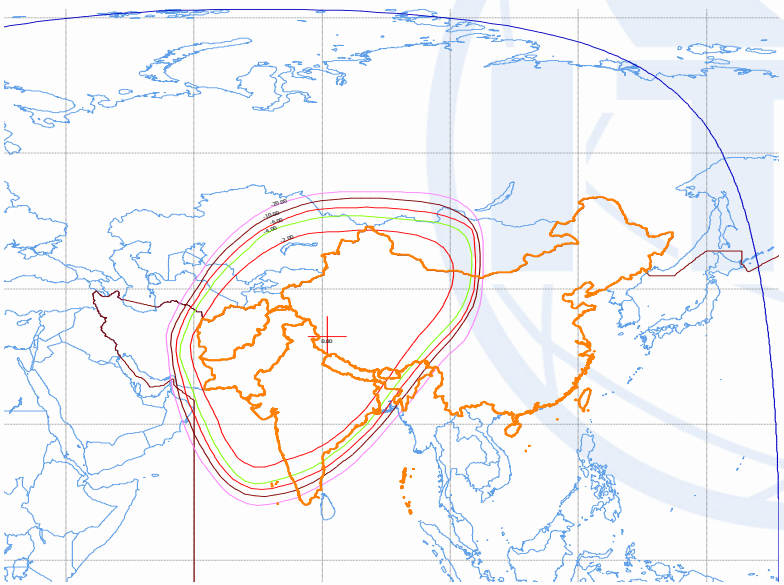
Alignment of coverage and service areas (2)

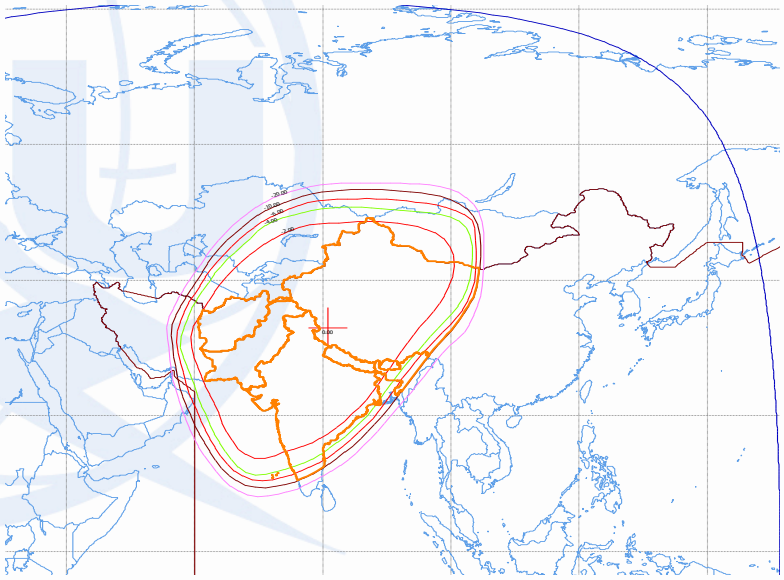
Example of a service area aligned with the coverage



Alignment of coverage and service areas (3)

In addition, as the service area represents the area where the service is provided, it should be covered by a not to low relative gain. Your Administration should either modify the coverage or, if the coverages have been already fixed, clip the service area with a raisonnable gain contour.



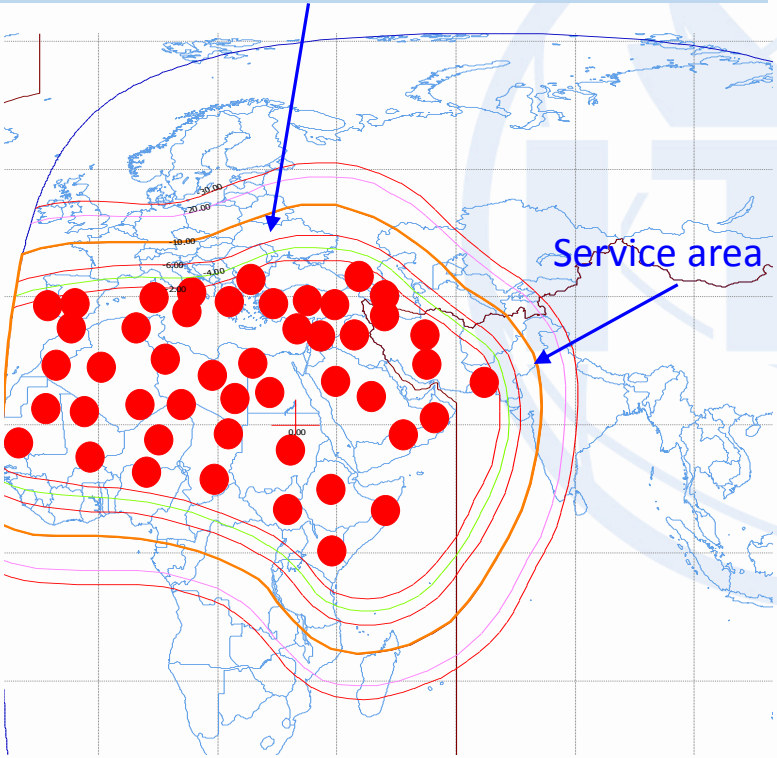


Test points and service area

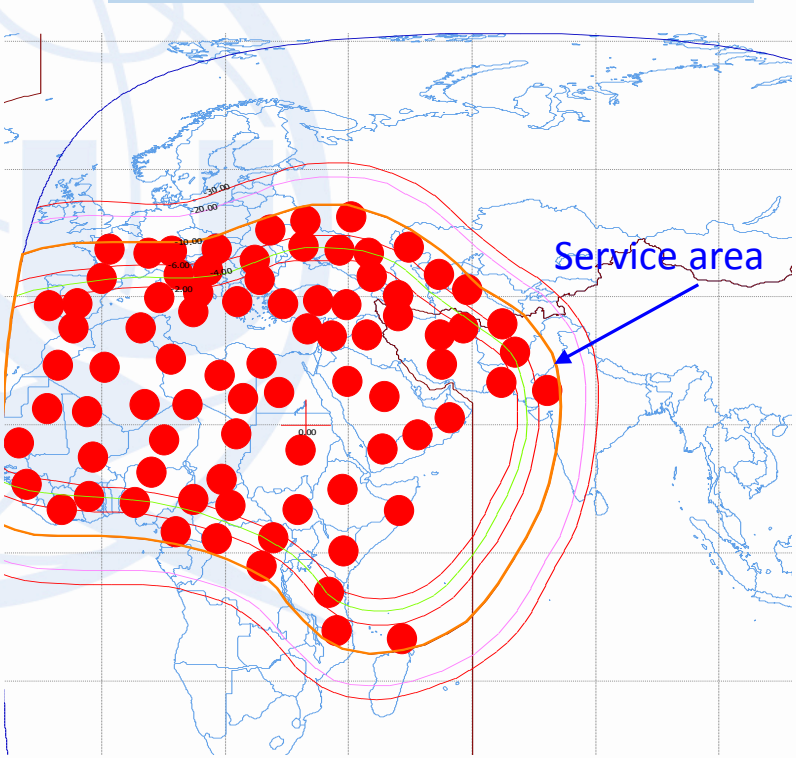
- Service area is defined by a set of test points in a 1-to-1 relation. Same set of test points shall describe the same service area.
- Sovereignty of disputed territories is not yet settled, therefore test points cannot be located in disputed territories. In the Preface, you can find the list of the Countries and Geographical Areas. In case of disputed territory, the notifying administration is indicated as XZZ.
- Test points should be located on land and within service area. If not, SpaceVal will give a fatal error.

Test point location

No test point is submitted to represent the portions of the service area with different relative gain

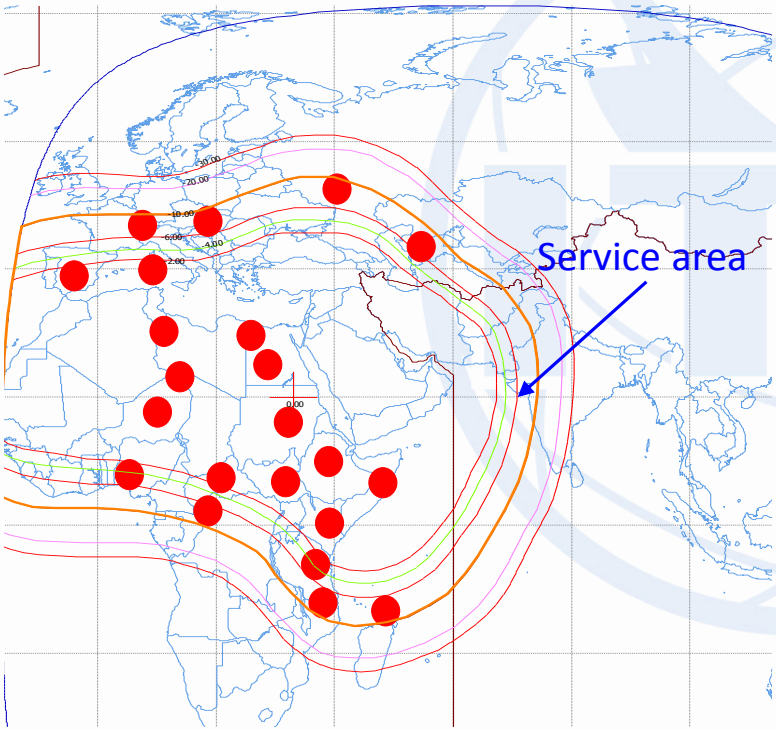


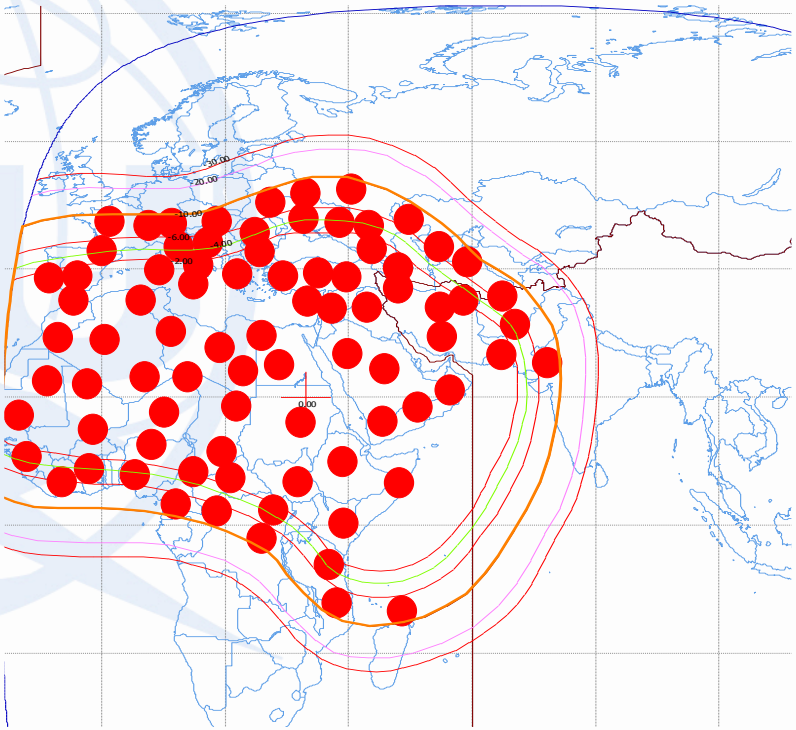
Test points should represent all areas with different relative gain contour



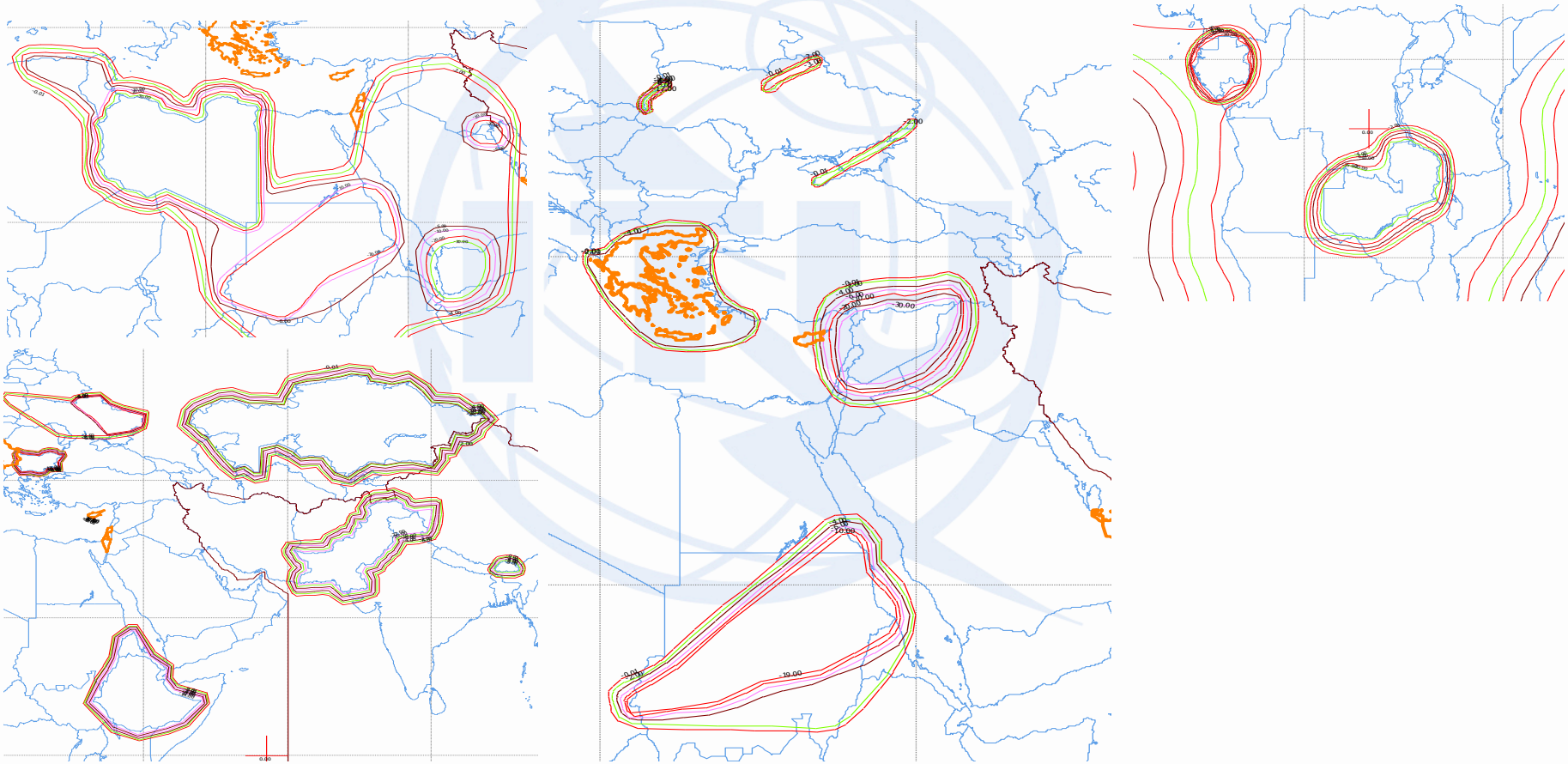
Test point distribution

Test points should be evenly distributed on all the service area

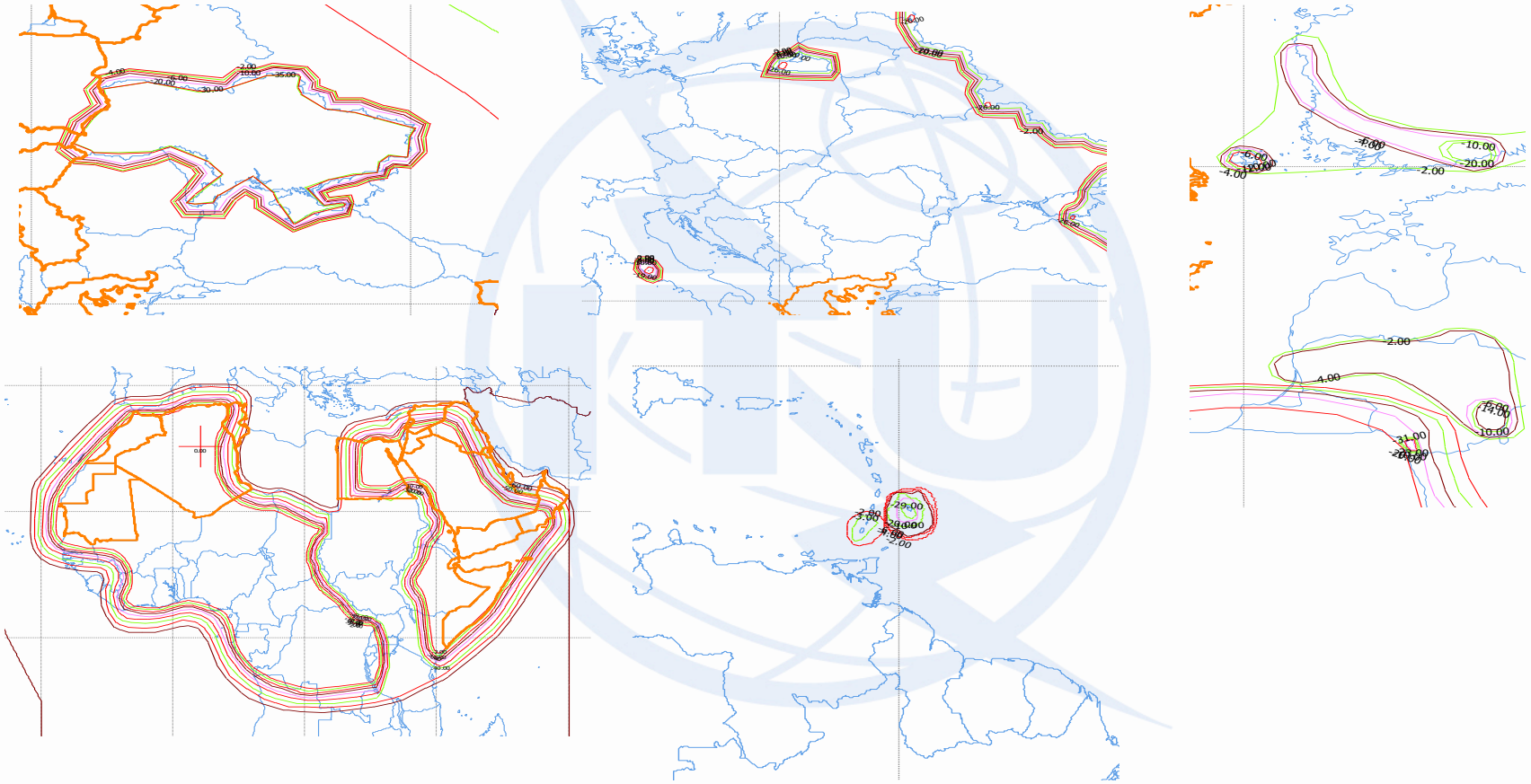




Irrealistic gain contours (1)



Irrealistic gain contours (2)



Irrealistic combination of Earth Station diameter and power density

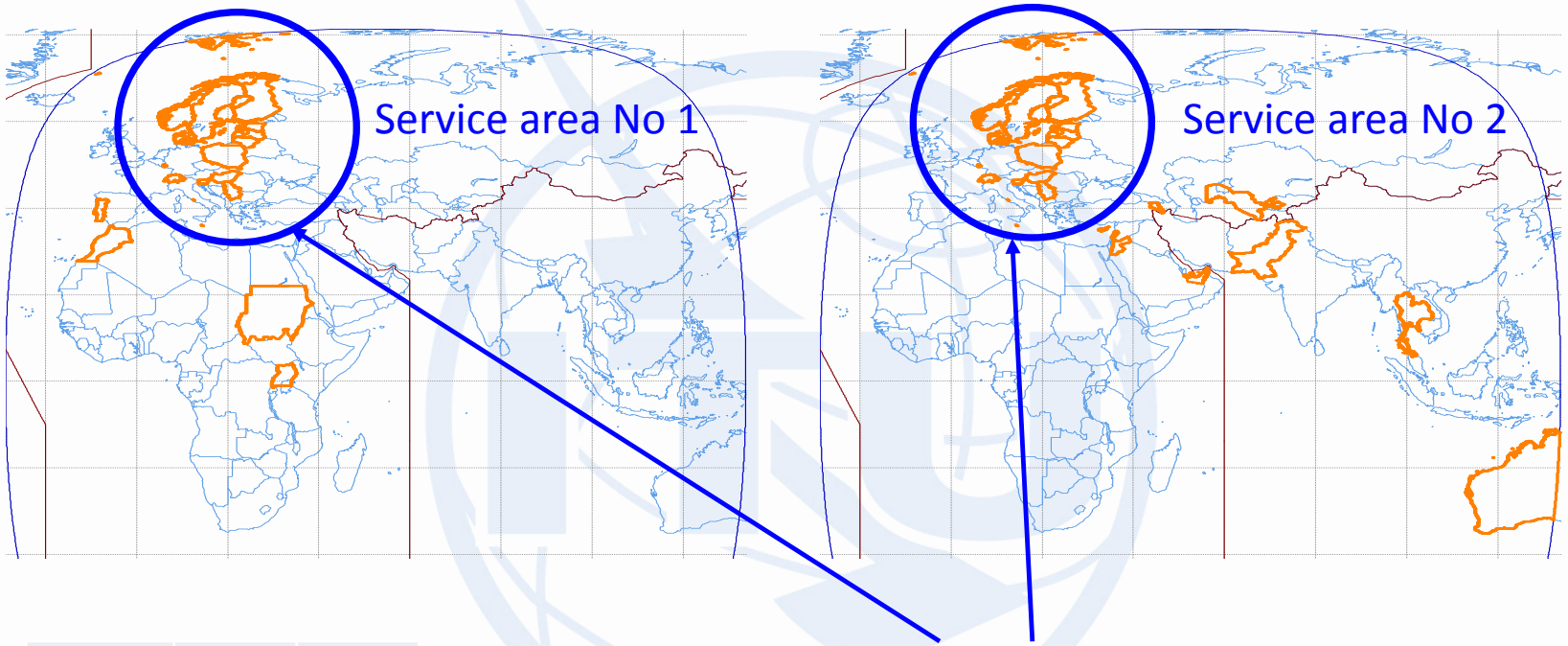
E/R	Frequency assignemnt [GHz]	Satellite gain [dBi]	Power density [dBW/Hz]	ES gain [dBi]	ES antenna diameter [m]	EIRP on 36MHz [dBW]	Max C/N [dB]
R	6.875	34.0	-75	25.1	0.30	25.1	-15.1
R	6.875	34.0	-75	28.7	0.45	28.7	-11.5
R	6.875	34.0	-75	31.2	0.60	31.2	-9.0
R	6.875	34.0	-75	33.7	0.80	33.7	-6.5
R	6.875	34.0	-75	35.6	1.00	35.6	-4.6
R	6.875	34.0	-75	37.2	1.20	37.2	-3.0
R	6.875	29.6	-72.6	37.3	1.22	39.7	-5.3
R	6.875	29.6	-72.6	39.8	1.62	42.2	-2.8
R	13	27.5	-70	24.3	0.14	29.3	-23.5
R	13	27.5	-66	24.3	0.14	33.3	-19.4
R	13	27.5	-57	24.3	0.14	42.3	-9.9
R	13	41.5	-70	24.3	0.14	29.3	-8.9
R	13	41.5	-66	24.3	0.14	33.3	-4.9
R	13	27.5	-49	24.3	0.14	50.3	-2.2
R	13	27.5	-70	27.0	0.20	32.0	-20.9
R	13	27.5	-66	27.0	0.20	36.0	-16.8
R	13	27.5	-57	27.0	0.20	45.0	-7.2
R	13	41.5	-70	27.0	0.20	32.0	-6.2
R	13	41.5	-66	27.0	0.20	36.0	-2.2
R	13	36.0	-65	30.7	0.30	40.7	-3.4
R	13	33.3	-72.6	37.2	0.64	39.6	-8.7
R	13	33.0	-72.6	37.2	0.64	39.6	-7.2
R	13	35.4	-72.6	37.2	0.64	39.6	-5.0
R	13	33.3	-69.5	41.3	1.02	46.8	-1.6
R	13	33.0	-69.5	41.3	1.02	46.8	0.0
E	4.65	25.0	-64.8	31.0	0.87	35.2	-6.8
E	4.65	30.0	-70.1	25.3	0.45	34.9	-2.9
E	11.075	36.1	-84.5	36.0	0.65	26.6	-10.8
E	4.65	30.0	-69.6	25.3	0.45	35.4	-2.6
E	11.075	37.0	-69.4	31.3	0.38	42.6	1.6

The Bureau receives several submissions with a combination of Earth Station diameter and power density leading to a C/N extremely low. The Bureau invites administrations to submit realistic values.

Multiple power densities (1)

- Multiple assignments with same characteristics except power density values are only allowed for submissions under §6.1 of Appendix 30B. ***For Part B submission***, only one power density is allowed as explained in the following slides.

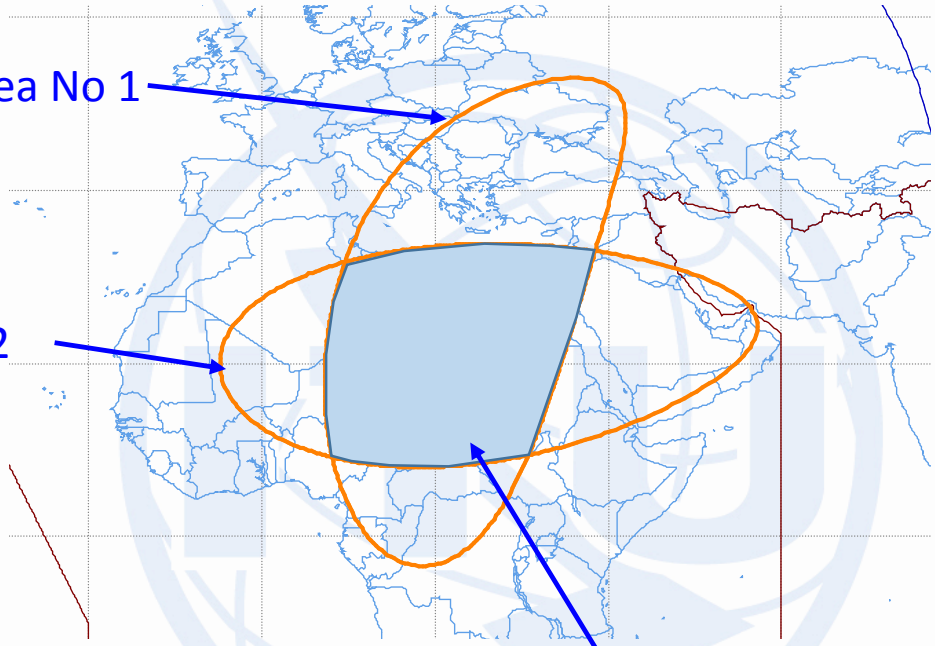
Multiple power densities (2)



Power density [dBW/Hz]	ES antenna gain [dBi]	Service area number
-60.6	49.8	1
-60.6	55.9	
-60.6	62.0	
-47.6	49.8	2
-47.6	55.9	
-47.6	62.0	

In the overlapping area (Europe) assignments have the same size of antenna with two different power levels. This is not allowed.

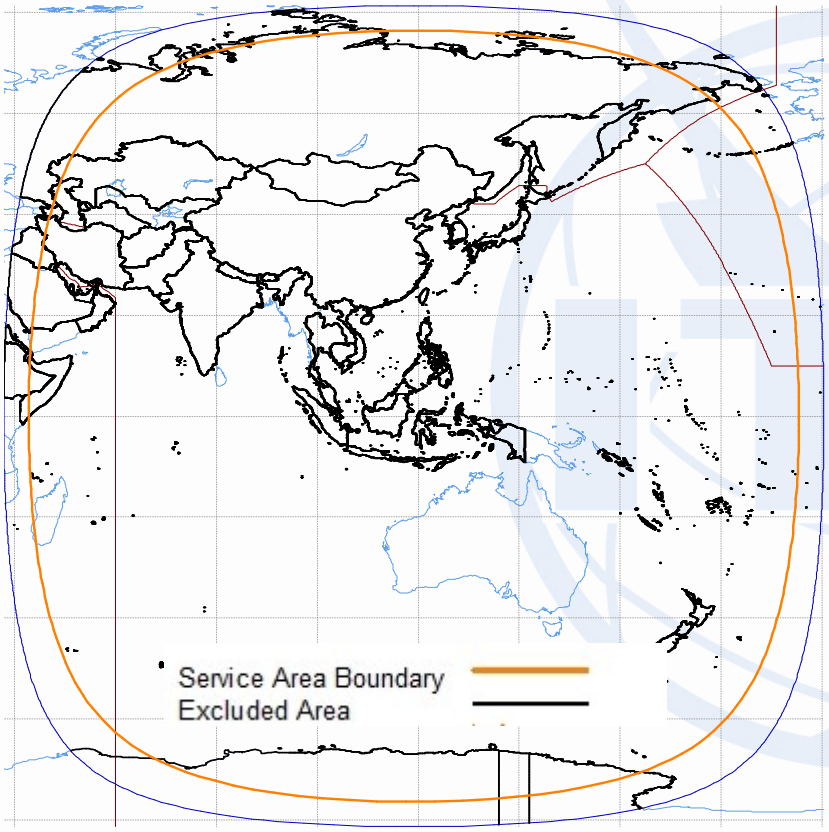
Multiple power densities (3)



Power density [dBW/Hz]	ES antenna gain [dBi]	Service area number
-60.6	49.8	1
-60.6	55.9	
-60.6	62.0	
-47.6	49.8	2
-47.6	55.9	
-47.6	62.0	

In the overlapping area assignments have the same size of antenna with two different power levels. This is not allowed.

Service area including sea (Part B)



The Bureau strongly discourages this practice because grid points will be generated also in sea, this means

- Protection will be provided to the subject satellite network along the coasts of territories not included in the service area;
- A different use of grid points as they have been introduced to avoid holes around test points, but test points are not allowed in sea;
- A different approach with respect to uplink and aggregate criteria as they provide protection only on test points, therefore only on land.

Thank you