

01 June 2023

By Email

The Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India
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Kind Attn: Shri Akhilesh Kumar Trivedi, Advisor (Networks, Spectrum and Licensing)

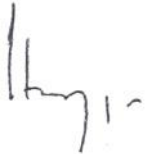
Subject: Tata Play's comments on TRAI's Consultation Paper dated 06 April 2023 on 'Assignment of Spectrum for Space-based Communication Services'

Dear Sir,

We thank you for the opportunity to express our views on the above captioned Consultation Paper. Tata Play's response to the same is enclosed for your ready reference.

Thanking you.

Yours sincerely,



Harit Nagpal
Managing Director and CEO

Enclosed: As above

TATA PLAY'S COMMENTS DATED 01 JUNE 2023 TO TRAI'S CONSULTATION PAPER DATED 06 APRIL 2023 ON 'ASSIGNMENT OF SPECTRUM FOR SPACE-BASED COMMUNICATION SERVICES'

TP PRELIMINARY OBJECTIONS:

DoT's Reference:

- At the outset, we wish to highlight the fact that TRAI has issued this consultation paper on the reference of DoT which is the licensing authority for the telecom operators and ISPs.
- No such reference has been issued by the MIB which is the licensing authority for the Broadcasting industry and hence the consultation process should be limited to telecom operators and ISPs and not extended to Broadcasting.

Unviable for DTH Industry:

- Earth station to the satellite and at consumer homes a small ODU (Dish & LNB) is used to receive the signal.
- The same Ku band spectrum is used by multiple DTH Operators on different satellites at different orbital positions. The spectrum is not exclusive to operators, unlike terrestrial where the spectrum is exclusive and cannot be reused by multiple operators across the same geographical area.
- If the spectrum was auctioned and a DTH operator acquired a part of the spectrum which becomes exclusive, the operator will have to operate on multiple satellites at different orbital positions hence making the system complex and unviable.
- If the spectrum is auctioned, the cost of acquiring the spectrum will increase manifold. DTH industry is as it is facing increased challenges, this would add to the burden and hasten the collapse of the industry. The government must therefore withdraw any such proposal.

Administrative assignment is the right approach:

- Satellite spectrum should be assigned administratively on non-exclusive basis to ensure efficient utilization of the spectrum resource and only to all eligible licensees.
- Auction is done for any resource which is scarce, exclusive, has high demand but low supply etc. The spectrum available for space-based communication services, does not qualify to be auctioned.
- Auctioning such a shareable resource is an attempt to artificially change the nature of satellite spectrum. This will disrupt existing use cases of satellite spectrum, create artificial scarcity and lead to market failures.

Disrupt B&CS industry:

- DoT's plan to auction this spectrum creates uncertainty for the industry as auctioning them will disrupt the B&CS industry:
- The B&CS sector is already witnessing interference with terrestrial services provided by telcom companies due to the recent 5G auction that auctioned some portion of the C-Band.
- If the Ku Band is also auctioned, then there will be severe interferences.
- Also, if Ku-Band is auctioned, then such frequencies may be used for non-broadcast services and hence create artificial scarcity for broadcasting services. This in turn will have implications on the supply and hence the cost of using satellite spectrum (or license fee) for DTH Operators.
- Also, if satellite frequencies are auctioned and used for terrestrial transmission, then it could lead to satellites becoming redundant.

Auctioning, by limiting participation/users, would increase concentration amongst dominant players, creating gatekeepers who could corner spectrum, rent-seek from broadcasters, DTH Operators, and create artificial entry barriers. Therefore, auctioning of satellite spectrum will result in reduced competition and impact the plurality and diversity of views in India.

Challenges on exclusive assignment:

- Resource such as satellite spectrum, which is shared, non-exclusive, there is no rationale for allocating it on exclusive basis. Major challenges can be foreseen if spectrum assigned on exclusive basis:
 - a. Fragmentation of shared spectrum resources will result inefficient use of spectrum for satellite services.
 - b. Lead to hoarding of spectrum by exclusive assignee, which may or may not use it.
 - c. Market distortion and lead to monopoly which will be against the principle of fair competition

No Global reference on auctioning:

- There is no reference globally wherein the satellite spectrum is auctioned. Few countries which have tried the spectrum auction in higher bands (C, Ku, Ka) have failed miserably and reverted to administrative allocation.
- TRAI in its paper has mentioned that only four countries have engaged in some form of competitive allocation in connection to space communications (Brazil, Mexico, United States, and Saudi Arabia) and three of those countries (Brazil, Mexico and United States) decided to discontinue the auction system for satellite communications, as it was not practicable.
- These administrations rescinded that approach and moved back to administrative assignment on a sharable basis which is the most efficient and optimal use of the spectrum for space-based communication services.

Conclusion:

- Auctioning of satellite spectrum is not in the public interest.
- It will lead to artificial scarcity and will lead to market failure:
- Even the Supreme Court, in the Presidential Reference to the 2G spectrum judgement, emphasised that “Auction may be the best way of maximising revenue, but revenue maximisation may not always be the best way to serve public good.”
- Drawing from this judgment and the fact that satellite spectrum can be shared amongst multiple service providers without diminishing what is available to others, administrative allocation is the most efficient method of allocation.

QUESTION – WISE RESPONSE:

Q1. For space-based communication services, what are the appropriate frequency bands for (a) gateway links and (b) user links, that should be considered under this consultation process for different types of licensed telecommunications and broadcasting services? Kindly justify your response with relevant details.

TP RESPONSE:

- For DTH, Ku Band is appropriate since it requires smaller antenna for reception at consumer homes.
- The frequencies bands specified by TEC vide TEC STANDARD NO. TEC 42012: 2021, clause 5.1 should apply.

Q2. What quantum of spectrum for (a) gateway links and (b) user links in the appropriate frequency bands is required to meet the demand of space-based communication services? Information on present demand and likely demand after about five years may kindly be provided in two separate tables as per the proforma given below:

TP RESPONSE:

- Although DTH is specified in the table, however this should not apply to DTH.
- In DTH, the entire down link signal is received by all users. It is one way communication and there is no communication back from user to the earth station via satellite. Hence User / gateway link bandwidth is not applicable for DTH operations.
- The Ku Band uplink and downlink spectrum bandwidth for DTH as specified by TEC vide TEC STANDARD NO. TEC 42012: 2021, clause 5.1 should apply.

Q3. Whether there is any practical limit on the number of Non-Geo Stationary Orbit (NGSO) satellite systems in Low Earth Orbit (LEO) and Medium Earth Orbit (MEO), which can work in a coordinated manner on an equitable basis using the same frequency range? Kindly justify your response.

TP RESPONSE:

No comments

Q4. For space-based communication services, whether frequency spectrum in higher bands such as C band, Ku band and Ka band, should be assigned to licensees on an exclusive basis? Kindly justify your response. Do you foresee any challenges due to exclusive assignment? If yes, in what manner can the challenges be overcome? Kindly elaborate the challenges and the ways to overcome them.

- Satellite spectrum should be assigned administratively on non-exclusive basis to ensure efficient utilization of the spectrum resource and only to all eligible licensees.
- Major challenges can be foreseen if spectrum assigned on exclusive basis:
 - a. Fragmentation of shared spectrum resources will result inefficient use of spectrum for satellite services.
 - b. Lead to hoarding of spectrum by exclusive assignee, which may or may not use it.
 - c. Market distortion and lead to monopoly which will be against the principle of fair competition

Q5. In case it is decided to assign spectrum in higher frequency bands such as C band, Ku band and Ka band for space-based communication services to licensees on an exclusive basis,

(a) What should be the block size, minimum number of blocks for bidding and spectrum cap per bidder? Response may be provided separately for each spectrum band.

(b) Whether intra-band sharing of frequency spectrum with other satellite communication service providers holding spectrum upto the prescribed spectrum cap, needs to be mandated?

(c) Whether a framework for mandatory spectrum sharing needs to be prescribed? If yes, kindly suggest a broad framework and the elements to be included in the guidelines.

(d) Any other suggestions to ensure that that the satellite communication ecosystem is not adversely impacted due to exclusive spectrum assignment, may kindly be made with detailed justification.

Kindly justify your response.

Q6. What provisions should be made applicable on any new entrant or any entity who could not acquire spectrum in the auction process/assignment cycle?

(a) Whether such entity should take part in the next auction/ assignment cycle after expiry of the validity period of the assigned spectrum? If yes, what should be the validity period of the auctioned/assigned spectrum?

(b) Whether spectrum acquired through auction be permitted to be shared with any entity which does not hold spectrum/ or has not been successful in auction in the said band? If yes, what measures should be taken to ensure rationale of spectrum auction and to avoid adverse impact on the dynamics of the spectrum auction?

(c) In case an auction based on exclusive assignment is held in a spectrum band, whether the same spectrum may again be put to auction after certain number of years to any new entrant including the entities which could not acquire spectrum in the previous auction? If yes,

(i) After how many years the same spectrum band should be put to auction for the potential bidders?

(ii) What should be the validity of spectrum for the first conducted auction in a band? Whether the validity period for the subsequent auctions in that band should be co-terminus with the validity period of the first held auction?

Kindly justify your response.

Q7. Whether any entity which acquired the satellite spectrum through auction/assignment should be permitted to trade and/or lease their partial or entire satellite spectrum holding to other eligible service licensees, including the licensees which do not hold any spectrum in the concerned spectrum band? If yes, what measures should be taken to ensure rationale of spectrum auction and to avoid adverse impact on the dynamics of the spectrum auction? Kindly justify your response.

Q8. For the existing service licensees providing space-based communication services, whether there is a need to create enabling provisions for assignment of the currently held spectrum frequency range by them, such that if the service licensee is successful in acquiring required quantum of spectrum through auction/ assignment cycle in the relevant band, its services are not disrupted? If yes, what mechanism should be prescribed? Kindly justify your response.

Q9. In case you are of the opinion that the frequency spectrum in higher frequency bands such as C band, Ku band and Ka band for space-based communication services should be assigned on shared (non-exclusive) basis, -

(a) Whether a broad framework for sharing of frequency spectrum among satellite communication service providers needs to be prescribed or it should be left to mutual coordination? In case you are of the opinion that broad framework should be prescribed, kindly suggest the framework and elements to be included in such a framework.

(b) Any other suggestions may kindly be made with detailed justification.

Kindly justify your response.

Q10. In the frequency range 27.5-28.5 GHz, whether the spectrum assignee should be permitted to utilize the frequency spectrum for IMT services as well as space-based communication services, in a flexible manner? Do you foresee any challenges arising out of such flexible use? If yes, in what manner can the challenges be overcome? Kindly elaborate the challenges and the ways to overcome them.

Q11. In case it is decided to permit flexible use in the frequency range of 27.5 - 28.5 GHz for space-based communication services and IMT services, what should be the associated terms and conditions including eligibility conditions for such assignment of spectrum? Kindly justify your response.

Q12. Whether there is a requirement for permitting flexible use between CNPN and space-based communication services in the frequency range 28.5-29.5 GHz? Kindly justify your response.

Q13. Do you foresee any challenges in case the spectrum assignee is permitted to utilize the frequency spectrum in the range 28.5-29.5 GHz for cellular based CNPN as well as space-based communication services, in a flexible manner? What could be the measures to mitigate such challenges? Suggestions may kindly be made with justification.

Q14. Whether space-based communication services should be categorized into different classes of services requiring different treatment for spectrum assignment? If yes, what should be the classification of services and which type of services should fall under each class of service? Kindly

justify your response. Please provide the following details: a) Service provider-wise details regarding financial and market parameters such as total revenue, total subscriber base, total capital expenditure etc. for each type of service (as mentioned in the Table 1.3 of this consultation paper) for the financial year 2018-19, 2019-20, 2020-21, 2021-22, and 2022-23 in the format given below: b) Projections on revenue, subscriber base and capital expenditure for each type of service (as mentioned in the Table 1.3 of this consultation paper) for the whole industry for the next five years starting from financial year 2023-24, in the format given.

Q15. What should be the methodology for assignment of spectrum for user links for space-based communication services in L-band and S-band, such as-

- (a) Auction-based
- (b) Administrative
- (c) Any other?

Please provide your response with detailed justification.

TP RESPONSE:

No comments

Q16. What should be the methodology for assignment of spectrum for user links for space-based communication services in higher spectrum bands like C-band, Ku-band and Ka-band, such as

- (a) Auction-based
- (b) Administrative
- (c) Any other?

Please provide your response in respect of different types of services (as mentioned in Table 1.3 of this consultation paper). Please support your response with detailed justification.

TP RESPONSE:

- For DTH it should be administrative, controlled by ITU / TEC, DoT
- The spectrum should not be auctioned because of following reasons:
 - a. DTH operations are dependent on the orbital position of the GEO satellite. The signal is uplinked from the Earth station to the satellite and at consumer homes a small ODU (Dish & LNB) is used to receive the signal.
 - b. The same Ku band spectrum is used by multiple DTH Operators on different satellites at different orbital positions. The spectrum is not exclusive to operators, unlike terrestrial where the spectrum is exclusive and cannot be reused by multiple operators across the same geographical area.
 - c. If the spectrum was auctioned and a DTH operator acquired a part of the spectrum which becomes exclusive, the operator will have to operate on multiple satellites at different orbital positions hence making the system complex and unviable.

Q17. Whether spectrum for user links should be assigned at the national level, or telecom circle/ metro-wise? Kindly justify your response.

Q18. In case it is decided to auction user link frequency spectrum for different types of services, should separate auctions be conducted for each type of services? Kindly justify your response with detailed methodology.

TP RESPONSE:

No comments

Q19. What should be the methodology for assignment of spectrum for gateway links for space-based communication services, such as

- (a) Auction-based
- (b) Administrative
- (c) Any other?

Please provide your response in respect of different types of services. Please support your response with detailed justification.

TP RESPONSE:

- The assignment should be administrative on non-exclusive basis.
- Auctioning, by limiting participation/users, would increase concentration amongst dominant players, creating gatekeepers who could corner spectrum, rent-seek from broadcasters, DTH Operators, and create artificial entry barriers.
- Therefore, auctioning of satellite spectrum will result in reduced competition and impact the plurality and diversity of views in India.

Q20. In case it is decided to auction gateway link frequency spectrum for different types of services, should separate auctions be conducted for each type of services? Kindly justify your response with detailed methodology.

Q21. In case it is decided to assign frequency spectrum for space-based communication services through auction,

- (a) What should be the validity period of the auctioned spectrum?
- (b) What should be the periodicity of the auction for any unsold/ available spectrum?
- (c) Whether some mechanism needs to be put in place to permit the service licensee to shift to another satellite system and to change the frequency spectrum within a frequency band (such as Ka-band, Ku-band, etc.) or across frequency bands for the remaining validity period of the spectrum held by it? If yes, what process should be adopted and whether some fee should be charged for this purpose?

Kindly justify your response.

Q22. Considering that (a) space-based communication services require spectrum in both user link as well as gateway link, (b) use of frequency spectrum for different types of links may be different for different satellite systems, and (c) requirement of frequency spectrum may also vary depending on the services being envisaged to be provided, which of the following would be appropriate: (i) to assign spectrum for gateway links and user links separately to give flexibility to the stakeholders? In case your response is in the affirmative, what mechanism should be adopted such that the successful bidder gets spectrum for user links as well as gateway links. (ii) to assign spectrum for gateway links and user links in a bundled manner, such that the successful bidder gets spectrum for user link as well as gateway link? In case your response is in the affirmative, kindly suggest appropriate assignment methodology, including auction so that the successful bidder gets spectrum for user links as well as gateway links.

- (a) Minimum Net Worth
- (b) Requirement of existing agreement with satellite operator(s)
- (c) Requirement of holding license/ authorization under Unified License prior to taking part in the auction process.

or

Q23. Whether any protection distance would be required around the satellite earth station gateway to avoid interference from other satellite earth station gateways for GSO/ NGSO satellites using the same frequency band? If yes, what would be the protection distance (radius) for the protection zone for GSO/ NGSO satellites?

Q24. What should be the eligibility conditions for assignment of spectrum for each type of space-based communication service (as mentioned in the Table 1.3 of this Consultation Paper)? Among other things, please provide your inputs with respect to the following eligibility conditions:

Kindly justify your response

Q25. What should be the terms and conditions for assignment of frequency spectrum for both user links as well as gateway links for each type of space-based communication service? Among other things, please provide your detailed inputs with respect to roll-out obligations on space-based communication service providers. Kindly provide response for both scenarios viz. exclusive assignment and non-exclusive (shared) assignment with justification.

Q26. Whether the provisions contained in the Chapter-VII (Spectrum Allotment and Use) of Unified License relating to restriction on crossholding of equity should also be made applicable for satellite-based service licensees? If yes, whether these provisions should be made applicable for each type of service separately? Kindly justify your response.

Q27. Keeping in view the provisions of ITU's Radio Regulations on coexistence of terrestrial services and space-based communication services for sharing of same frequency range, do you foresee any challenges in ensuring interference-free operation of space-based communication network and terrestrial networks (i.e., microwave access (MWA) and microwave backbone (MWB) point to point links) using the same frequency range in the same geographical area? What could be the measures to mitigate such challenges? Suggestions may kindly be made with justification.

Q28. In what manner should the practice of assignment of a frequency range in two polarizations should be taken into account in the present exercise for assignment and valuation of spectrum? Kindly justify your response.

Q29. What could be the likely issues, that may arise, if the following auction design models (described in para 3.127 to 3.139) are implemented for assignment of spectrum for user links in higher bands (such as C band, Ku band and Ka band)?

a. Model #1: Exclusive spectrum assignment

b. Model#2: Auction design model based on non-exclusive spectrum assignment to only a limited number of bidders

What changes should be made in the above models to mitigate any possible issues, including ways and means to ensure competitive bidding? Response on each model may kindly be made with justification.

Q30. In your opinion, which of the two models mentioned in Question 29 above, should be used? Kindly justify your response.

Q31. In case it is decided to assign spectrum for user links using model # 2 i.e., non-exclusive spectrum assignment to limited bidders ($n + \Delta$), then what should be

(a) the value of Δ , in case it is decided to conduct a combined auction for all services

(b) the values of Δ , in case it is decided to conduct separate auction for each type of service

Please provide detailed justification.

Q32. Kindly suggest any other auction design model(s) for user links including the terms and conditions? Kindly provide a detailed response with justification as to how it will satisfy the requirement of fair auction i.e., market discovery of price.

Q33. What could be the likely issues, that may arise, if Option # 1: (Area specific assignment of gateway spectrum on administrative basis) is implemented for assignment of spectrum for gateway links? What changes could be made in the proposed option to mitigate any possible issues?

Q34. What could be the likely issues, that may arise, if Option # 2: Assignment of gateway spectrum through auction for identified areas/ regions/ districts is implemented for assignment of spectrum for gateway links? What changes could be made in the proposed option to mitigate any possible issues? In what manner, areas/ regions/ districts should be identified?

Q35. In your view, which spectrum assignment option for gateway links should be implemented? Kindly justify your response.

Q36. Kindly suggest any other auction design model(s) for gateway links including the terms and conditions? Kindly provide a detailed response with justification as to how it will satisfy the requirement of fair auction i.e., market discovery of price?

Q37. Any other issues/suggestions relevant to the subject, may be submitted with proper explanation and justification.

Q38. In case it is decided for assignment of spectrum on administrative basis, what should be the spectrum charging mechanism for assignment of spectrum for space-based communications services

- i. For User Link**
- ii. For Gateway Link**

Please support your answer with detailed justification.

Q39. Should the auction determined prices of spectrum bands for IMT /5G services be used as a basis for valuation of space-based communication spectrum bands

- i. For user link**
- ii. For gateway link**

Please support your answer with detailed justification.

Q40. If response to the above question is yes, please specify the detailed methodology to be used in this regard?

Q41. Whether the value of space-based communication spectrum bands

- i. For user link**
- ii For gateway link**

be derived by relating it to the value of other bands by using a spectral efficiency factor? If yes, with which spectrum bands should these bands be related to and what efficiency factor or formula should be used? Please support your response with detailed justification.

Q42. In case of an auction, should the current method of levying spectrum fees/charges for satellite spectrum bands on formula basis/ AGR basis as followed by DoT, serve as a basis for the purpose of valuation of satellite spectrum

- i. For user link**
- ii. For gateway link**

If yes, please specify in detail what methodology may be used in this regard.

Q43. Should revenue surplus model be used for the valuation of space-based spectrum bands

- i. For user link**
- ii. For gateway link**

Please support your answer with detailed justification.

Q44. Whether international benchmarking by comparing the auction determined prices of countries where auctions have been concluded for space-based communication services, if any, be used for arriving at the value of space-based communication spectrum bands:

- i. For user link**
- ii For gateway link**

If yes, what methodology should be followed in this regard? Please give country-wise details of auctions including the spectrum band /quantity put to auction, quantity bid, reserve price, auction determined price etc. Please support your response with detailed justification.

Q45. Should the international administrative spectrum charges/fees serve as a basis/technique for the purpose of valuation in the case of satellite spectrum bands

- i. For user link
- ii. For gateway link

Please give country-wise details of administrative price being charged for each spectrum band. Please specify in detail terms and conditions in this regard.

Q46. If the answer to above question is yes, should the administrative spectrum charges/fees be normalized for cross country differences? If yes, please specify in detail the methodology to be used in this regard?

Q47. Apart from the approaches highlighted above which other valuation approaches can be adopted for the valuation of space-based communication spectrum bands? Please support your suggestions with detailed methodology, related assumptions and other relevant factors.

Q48. Should the valuation arrived for spectrum for user link be used for valuation for spectrum for gateway links as well? Please justify.

Q49. If the answer to the above is no, what should be the basis for distinction as well as the methodology that may be used for arriving at the valuation of satellite spectrum for gateway links? Please provide detailed justification.

Q50. Whether the value arrived at by using any single valuation approach for a particular spectrum band should be taken as the appropriate value of that band? If yes, please suggest which single approach/ method should be used. Please support your answer with detailed justification.

Q51. In case your response to the above question is negative, will it be appropriate to take the average valuation (simple mean) of the valuations obtained through the different approaches attempted for valuation of a particular spectrum band, or some other approach like taking weighted mean, median etc. should be followed? Please support your answer with detailed justification.

Q52. Should the reserve price for spectrum for user link and gateway link be taken as 70% of the valuation of spectrum for shared as well as for exclusive assignment? If not, then what ratio should be adopted between the reserve price for the auction and the valuation of the spectrum in different spectrum bands in case of (i) exclusive (ii) shared assignment and why? Please support your answer with detailed justification.

Q53. If it is decided to conduct separate auctions for different class of services, should reserve price for the auction of spectrum for each service class be distinct? If yes, on what parameter basis such as revenue, subscriber base etc. this distinction be made? Please support your answer with detailed justification for each class of service.

Q54. In case of auction based and/or administrative assignment of spectrum, what should the payment terms and associated conditions for the assignment of spectrum for space-based communication services relating to:

- i. Upfront payment
 - ii. Moratorium period
 - iii. Total number of installments to recover deferred payments
 - iv. Rate of discount in respect of deferred payment and prepayment
- Please support your answer with detailed justification.

TP RESPONSE:

No comments