RJIL/TRAI/2023-24/255
13th December 2023

To,
Shri Akhilesh Kumar Trivedi,
Advisor (Networks, Spectrum and Licensing),
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawaharlal Nehru Marg, New Delhi - 110002

Subject: **RJIL's comments on TRAI's Consultation Paper on 'Assignment of Spectrum in E&V Bands, and Spectrum for Microwave Access (MWA) & Microwave Backbone (MWB)'.**

Dear Sir,

Please find enclosed the comments of Reliance Jio Infocomm Limited (RJIL) on the Consultation Paper dated 27.09.2023 on **"Assignment of Spectrum in E&V Bands, and Spectrum for Microwave Access (MWA) & Microwave Backbone (MWB)"**.

Thanking you,

Yours Sincerely,
For **Reliance Jio Infocomm Limited**

KAPOOR SINGH GULIANI

Digitally signed by KAPOOR SINGH GULIANI
Date: 2023.12.13 18:05:04 +05'30'

Kapoor Singh Guliani
Authorized Signatory

Enclosure: As above

Reliance Jio Infocomm Limited's comments on TRAI's Consultation on "'Assignment of Spectrum in E&V Bands, and Spectrum for Microwave Access (MWA) & Microwave Backbone (MWB)" dated 27th September 2023.

Preface:

1. Reliance Jio Infocomm Limited (RJIL) thanks the Authority for giving an opportunity to offer comments on the important consultation paper on assignment of spectrum in E&V Band and for MWA and MWB spectrum.

2. We submit that the assignment methodology of spectrum in Microwave Access (MWA) and Microwave Backbone (MWB) is long pending and needs to be resolved on urgent basis. Similarly, the critical spectrum available in E-Band and V-Bands are not completely assigned and needs to be utilized fully to harness their potential.

A. Microwave Spectrum (6/ 7/13/15/ 18/ 21 GHz bands)

3. As noted by the Authority, for wireless backhaul, Microwave 'line-of-sight' wireless communication technology is critical to provide high speed wireless connections that can send and receive voice, video, and data information. Both Microwave Access (MWA) Carriers and Microwave Backbone (MWB) carriers are used to connect the network nodes for backhauling the traffic generated by the access network. This spectrum is irreplaceable in disaster situations and Cell on Wheels (COW) are connected to the network only with the help of MWA/MWB.

4. New data centric technologies like 5G, 6G and beyond support or will support higher and higher rates of data transmissions and consequently, higher, and higher bandwidth of spectrum is required to meet the traffic backhauling requirement. 5G has led to massive increase in the need for increasing the backhaul capacity which can ideally be met with the optical fiber. However, the rollout of fiber to each location is not techno-economically feasible and is time consuming due to RoW permissions and external dependencies. Therefore, wireless backhaul becomes the only feasible alternative for many of the sites in India. The Government is aware of the same, therefore, upto two carriers of spectrum in E-Band and additional MWA carriers were offered to the TSPs on temporary basis to meet the capacity requirements.

5. We submit that unavailability of sufficient backhaul spectrum will impact the Quality of Service (QoS) leading to poor customer experience and reduced speed in 5G & upcoming 6G networks. Therefore, it is critical that the more and more backhaul spectrum is made available at affordable price.

6. **While the TSPs requires more backhaul spectrum, only 345 out of a total 1699 available MWA (20%) carriers are offered to existing TSPs, and remaining carriers do not generate any revenue to exchequer. The TSPs are wary of acquiring more carriers on administrative basis due to prohibitively high cost in the form of revenue share. Such high cost does not make acquisition of additional spectrum for backhaul economically viable.**

7. It is no doubt that Microwave will remain the backbone for communication needs of a large portion of Indian population and it is imperative that sufficient backhaul spectrum is made available at reasonable and market determined prices to facilitate high quality services and to maximize spectrum utilization and benefits in transparent manner. Accordingly, these bands should only be assigned through auction.

B. Spectrum in V-band (52.6 GHz to 71 GHz) and E-band (71GHz - 76 GHz paired with 81 GHz-86 GHz)

8. E-Band (71-76 GHz & 81-86 GHz) is a paired spectrum used in FDD mode. It is suitable for high capacity backhaul for 4G/5G, 6G and beyond mobile networks and also suitable as access spectrum for delivering broadband services to the end users**. It can be used for connecting enterprise buildings with high-capacity links. It is already identified as backhaul for 5G and is also deemed useful for Integrated Access Backhaul (IAB) under 5G.**

9. V-Band (52.6 - 71 GHz) is un-paired spectrum used in TDD mode and is suitable as high capacity backhaul spectrum for mobile 4G/5G mobile network and also **suitable as Access Spectrum. WRC-19 has already identified the upper portion of V band (66-71 GHz) for IMT / 5G services, and no country has delicensed this band post that. 3GPP has already identified 52.6-71 GHz for 5G NR (New Radio).** With passages of time, therefore, the lower portion of spectrum is likely to be considered for IMT (5G/6G) services.

10. Spectrum in V & E bands serves both – Backhaul and Access purposes. 3GPP Rel-16 introduced backhaul / relay service under the Integrated Access Backhaul (IAB) umbrella. The use of E&V bands for IAB will go long way in **providing high speed broadband access in the densely populated areas where laying last mile fiber is difficult, time consuming and uneconomical.** This will also result in an efficient utilization of scares natural resource by removing the artificial barrier between access and backhaul use of spectrum. In currently developed NR-IAB, some nodes serve both backhaul and access. In absence of a wired connection, wireless technologies are used to offer backhaul / relay service. In IAB, a single node can offer broadband services/ relay services or a combination thereof. The expected coverage range is approximately 300m to 500m.

11. There is a demand to delicense V band for use in public Wi-Fi networks. However, the same is not justified, as public Wi-Fi, even without full mobility and only hotspot coverage will be directly competing with 5G and **would be a substitutable broadband service and thus should only be provided through licensed spectrum only following principle of "Same Service Same Rule".** Further, wide, and indiscriminate adoption of delicensed spectrum will cause serious interference issues thus rendering these bands technically unusable for IMT services. The Authority should also note that de-licensing of spectrum is a one-way irreversible process and shall be done only after careful analysis and study of demand, need, competitive landscape, existing investments, maintenance of level playing field etc.

12. The upper part-of the V-band i.e. 66 GHz to 71 GHz has already been identified for IMT in WRC-19. It is likely that the remaining part of V-band i.e. 52.6 GHz to 66 GHz is also likely to be identified for IMT and therefore if any part of this spectrum is delicensed, it will cause serious conflict with the identification of IMT. For instance, **the countries which have delicensed entire 6 GHz band for Wi-Fi services are now facing difficulty to reverse their decision when a large part of the band (i.e. 6.425 GHz to 7.025 GHz) is being considered for IMT in WRC-23.**

13. Further, some stakeholders have been demanding the assignment of E&V band on link-by-link basis at administrative prices as was recommended by the Authority long back in the year 2014. However, any such assignment will encourage the principle of 'first come first serve' which was denounced by Hon'ble Supreme Court in 2G case. In fact, recognizing the infeasibility of link-by-link assignment, Government has already decided and implemented the LSA wise assignment of E-band to the TSPs.

C. Spectrum Assignment Methodology

14. **It is evident from the DoT reference that the decision has already been taken for assigning the spectrum in E-band and V-band through auction and therefore there is no need to examine any other mode of assignment of this spectrum.** We further submit that any other mode of spectrum assignment for any other usage/service will not be feasible, as co-existence of exclusive use spectrum with non-exclusive use spectrum in same bands would lead on major interference issues. Further, the spectrum use by majority of the user categories are not for the uses which are different from the broadband services but they either fall under the subset (e.g. VPN, MPLS, CNPN etc) of the broadband services or are substitute (e.g. public Wi-Fi, GMPCS, VSAT) of IMT based broadband services. Therefore, there is no need of any different assignment methodology under the guise of uses by other user categories.

15. Therefore, considering the importance of these spectrum bands, the Authority should focus on a legally tenable, predictable, transparent and investor friendly mode of spectrum assignment for these bands. In compliance with the Hon'ble Supreme Court's order in 2012, India has used the most beneficial and transparent mode of Auction to assign spectrum for use in commercial public networks in the country and there is no reason or justification to reverse the Hon Supreme Court decision for MWA, MWB carriers and spectrum in E-Band and V-Band.

16. **We submit that the administrative assignment of spectrum is not a prudent or legally tenable policy. This policy will invariably sink to the dreaded 'First Come First Serve' policy, which was deemed most unsuitable for assigning public resource like spectrum by Hon'ble Supreme Court.** We submit that spectrum auction, besides being the only legally tenable mean of assigning spectrum is also the only mode of spectrum assignment that delivers the full promise of technology to the actual owners of the spectrum i.e., consumers. The auctions promote efficient utilization and put spectrum in hands of those most suitable to use the spectrum. Auction brings the much-wanted competition and innovation in services and pricing and helps deliver services at their most affordable levels. Auction is the only blemish free mode of assignment as it delivers fairness, transparency and prevents cartelization and leads to additional infrastructure creation that has a trickle-down effect on the economy, especially in rural areas.

17. Unlicensed access to spectrum usable for IMT services distorts the level playing field and impacts the investments in the sector, besides being technically ineffective. For instance, the usability of unlicensed V-Band and E-Band as access mediums for public Wi-Fi using un-licensed service providers in dense urban areas will create an alternative high speed data service, as Wi-Fi 6/Wi-Fi 7 offers comparable speeds, consistency, and reliability with 5G/IMT like "beamforming" capability. This will enable dense carrier-grade networks for unlicensed entities to compete with the TSPs operating their network on license spectrum and without accountability for national security, QoS, tariffs, or consumer interests. Any such policy will result into cannibalization of TSPs revenue that would negatively impact the Indian telecom sector and further shake investor confidence. Therefore, all spectrum usable in commercial public/private networks should always be auctioned, in compliance with Hon'ble Supreme Court mandate.

18. In view of the above, we request the Authority to include all the spectrum band under discussion in the scope for auction. The proposal for administrative assignment or delicensing of E and V Band Spectrum should be completely rejected **as it is not only legally untenable but also encourages favoritism, non-level playing field, violates "Same Service Same Rule" principle apart from coming at a great loss to the exchequer; causing technical issues like interference; bringing in inherent inefficiencies and is detrimental to investor's confidence.**

D. Technical limitations and issues with link-to-link allocations.

19. We submit that **link-by-link allocation would lead to in-efficient utilization of spectrum resource.** The interference caused by link-to-link allocations would be difficult to manage and timely mitigation of such issues on a daily basis would be nearly an impossible and herculean task for the WPC.

20. The link-to-link allocation of a large number of short-haul link has proved to be an inadequate arrangement in longer run. MWA spectrum was also initially allocated on link-to-link cases, however, with increasing number of BTS, administration of such allocation became a herculean task and effectively compelled the Government to migrate to exclusive LSA based assignment with license fee as percentage of AGR. Further, with high frequency in E and V band, the number of links are expected to be in multiples times of MWA links making such an allocation impractical. Further, due to short range of the E&V, it would be impossible to detect and enforce the illegal/ unlicensed use of these bands by WPC/WMO/DoT. On the other hand, LSA wise assignment to any entity will resolve such problem.

21. Allocating the spectrum on LSA basis through auction will enable exclusive access to spectrum resources to an entity, **thereby giving the much-needed flexibility for usage of the spectrum based on the evolving requirement by the operators. Further, the leasing policy can enable the smaller players to lease this spectrum in some specific areas from multiple parties.**

E. Spectrum leasing to accommodate players for Captive networks:

22. Any direct licensing of E&V band to the smaller entities requiring such spectrum in a smaller area will lead to huge fragmentation and inefficient use of the spectrum. Leaving the spectrum unsold in the remaining areas of the LSA in which some spectrum has been assigned to a smaller operator will lead to huge wastage of spectrum. Further, assignment of same frequencies in the LSA to multiple operators with smaller boundaries will lead to huge number of disputes which would need resolution by Government on day-to-day basis, thereby making such spectrum non-usable.

23. Therefore, an optimum mode to address the spectrum needs for niche players is to allow them to lease from the entities who have procured spectrum on LSA basis. Such an arrangement, through the private contract between the parties, will lead to interference mitigation between the parties without involving Government, hence, will be easy to administer. Leasing arrangement will additionally guarantee that the Licensee will be responsible to ensure **optimum and interference free use of this spectrum and all**

interference issues will be managed and mitigated effectively by the licensees, without any requirement of WPC intervention.

24. As submitted earlier in our response to consultation paper on "Auction of Spectrum in frequency bands identified for IMT/5G", and to "Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing", this can be done by **permitting the Unified license holders to lease the auction acquired spectrum to other unified license holders with appropriate authorization.**

25. We submit that with this innovative approach, the entities desirous of using this spectrum to build public/private communication networks can bid directly for spectrum in auction, while the other entities interested for spectrum use for Captive communication networks (except Indian Railways and Defence) can avail the same through spectrum leasing from the multiple entities who would have procured the spectrum directly from the Government on LSA basis through auction.

26. We submit the possible revenue through leasing would ensure greater competition for right to use this spectrum in auction, as these measures will provide additional revenue streams to the entities participating in LSA based auction.

27. This will ensure that spectrum requirements of all types of service providers can be met in an equitable manner as each of such entity will have multiple providers of the spectrum through leasing, while also resolving the issue of interference management and right valuation.

F. Valuation of spectrum and reserve price

28. The valuation of spectrum is the **most relevant aspect of any auction related consultation exercise.** We submit that for these new bands to be put to auction, the valuation requires paradigm shift in approach being followed at present. The new approach should delink the spectrum valuation from maximization of one- time spectrum auction rate and instead link it with **maximization of utilization, national objectives, proliferation goals, societal and economic impact on all spheres of life and to regenerate demand of spectrum and competition in sector and to ensure that no spectrum remains unsold.**

29. **National Objectives:** This spectrum is key to meet the declared objectives of proliferation of broadband technologies and digital inclusion. Therefore, the valuation exercise should result in optimum valuation that should be neither prohibitive for new entrants nor lead to a substantial loss to Exchequer. Considering the evolving usage of these spectrum bands and the fact that these are being auctioned for the first time, we should ensure that the valuation is transparent, non-discriminatory, pro-utilization and promotes efficiency

and consumer benefit and also lead to maximization of utilization. As the efficient utilization of spectrum many times fails due to revenue maximization objectives, the valuation should be sufficiently low.

30. **Past Auction Results:** We submit that past spectrum auction has been an important measure for spectrum valuation. However, as the spectrum in these bands is being auctioned for the first time, we may need to measure the spectral efficiency with a band nearest to propagation characteristic and juxtapose it with the existing and upcoming use cases of the spectrum. In this regard the auction determined price (ADP) of spectrum in mmWave should be useful for the valuation of spectrum in E-Band and V-Band. Considering the coverage and propagation characteristics, we suggest for valuation at 50% of mmWave ADP for these bands. Further, as the only known use case, as of now, for the spectrum in MWA and MWB bands is backhaul and the fact that a large amount of this spectrum is unutilized for a long time, we suggest that a valuation at 50% of E-Band and V-Band spectrum be used.

31. **International Benchmarking**: We submit that for new bands, international benchmarking is generally considered to be the more suitable mode. However, given the availability of auction determined price (ADP) for mmWave band (i.e. 26 GHz) in India, there is no need of relying on any international administrative charges for determining the value of E/V/MWA/MWB spectrum bands.

32. In view of this, we submit that the **valuation of spectrum should be ideal with Indian market realities and hence the valuation of V-Band and E-band should be kept at 50% of mmWave ADP.**

33. **Impact of proliferation on national economy**: The NDCP-2018 notes that ***"It has been broadly estimated that a 10% increase in broadband penetration in a country could potentially lead to an over 1% increase in GDP. However, studies in India estimate that the impact could be significantly higher for the country, given the increased productivity and efficiency gains that are likely to accrue to the economy"***. Thus, the policy makers need to keep the overall economic benefits of broadband penetration in mind, while carrying out the pricing exercise for spectrum, especially as the spectrum under discussion will be primarily used for backhaul and IAB.

34. **Cost benefit analysis of one-time revenue against the long-term gains through license fee:** Another important consideration is to cost benefit analysis where along with the long-term economic gains, the long-term gains from license fee due to deployment of spectrum

outweighs the one-time revenue. As per GSMA report[1] many countries are carefully considering wider economic goals rather than short-term monetary gains.

35. **Reserve Price:** We submit that while consideration of above points will lead us to optimum valuation of the spectrum, the most critical factor in increasing the competitive intensity and to discover true market value of the spectrum would be optimum reserve price. **We submit that 70% of valuation as reserve price is too steep and not conducive of wider participation in auction and throttle competition. It has resulted in selling the spectrum at reserve price and does not lead to discovery of market determined price with competition. Besides obviating the possibility of true market price discovery, it also acts as a deterrent for new entrants which is evident from past experience. Therefore, we request the Authority to reduce the reserve price to 50% of the spectrum valuation.** We submit this may help in discovery of true market price and will be beneficial in longer run as it will increase spectrum uptake, reduce the wastages due to unsold spectrum, maximize the overall return instead of maximizing the unit price and will also help in meeting proliferation goals while at the same time increasing the overall license fee proceeds.

G. Auction Payment Methodology

36. We submit that Union Cabinet's liberalizing approach should also be reflected in the payment methodology for the auction dues of TSPs. **The deferred payment scheme should be treated as a financing scheme for building vital national infrastructure and not as a monetization option.** Therefore, we submit that there should be **10% upfront payment requirement to ensure TSP's commitment, followed by a 5-year moratorium in payments. The remaining part of the payment should be spread over the remaining 15 years of spectrum validity. Further, the interest on these EMIs should be charged same as RBI Repo rate.** This will not only support the TSPs in faster roll-out but will also increase auction participation. We further submit that this deferred payment formula should be uniformly applied to all spectrum bands being put to auction.

H. Eligibility Conditions and Roll-Out obligations, Spectrum Cap, Surrender of spectrum.

37. **Eligibility Conditions**: We submit that there is no need to re-agitate the eligibility conditions for participating in auction. As per Indian Telegraph Act 1885, establishing, working, and maintaining Telegraph can only be done under an appropriate license issued by the Government and as currently Unified License regime is in place, **thus any applicant seeking acquire spectrum for establishing public/private network should do so only under applicable UL authorization.**

[1] https://www.gsma.com/spectrum/wp-content/uploads/2021/03/Mobile-spectrum-trends-and-insights-Q4-2020.pdf

38. **Roll-out obligations**: We further submit that roll-out obligations are required to ensure optimum utilization of spectrum. The roll-out obligations for new E-Band and V-band being put to auction for first time should be comparable to the roll-out obligations for spectrum in mmWave. **Further, as per the existing NIA conditions, the requirement of rollout obligation shall be treated as fulfilled once the same have been met with any spectrum band. We do not recommend roll-out obligations for MWA/MWB spectrum bands.**

39. **Spectrum cap:** We submit that the role of spectrum cap is to ensure and maintain sufficient competition in market and prevent monopolization of valuable national resources. **We submit that the monopolization is not possible when large amount of spectrum remains unsold. Thus, there is no case for in-band spectrum cap.**

40. **Surrender of Spectrum**: We submit that the Union Cabinet has provided the facility of surrender of spectrum post 10 years of acquiring spectrum in future auctions and this order should be implemented in letter and spirit for all spectrum bands**. Accordingly, the current provisions for surrender of access spectrum should be extended to spectrum in E-band, V-band and MWA and MWB spectrum.**

41. **Band Plan:** We have already indicated in our response to the consultation paper on "Auction of Spectrum in frequency bands identified for IMT/5G" that while V-Band spectrum should be allocated in TDD band plan, paired E-Band spectrum should be allocated with FDD band plan. The MWA and MWB spectrum should be allocated in FDD band plan.

42. **Block Size and Minimum quantity for bidding:** Considering the spectrum availability and high frequency, it would be prudent to keep the block size at 100 MHz for V-band spectrum and 2X250 MHz for spectrum in E-Band. The block size for MWA and MWB spectrum in auction be kept as 28 GHz for all the entities with minimum bid quantity for TSP with Access Service License/Authorization be kept as 2 blocks and whereas the minimum bid quantity for the rest of the entities be kept as 1 block.

43. **Reassignment of MWA spectrum already assigned:** At present MWA spectrum has been assigned on administrative basis with an option to charge the auction price. Further, the present equipment is specific to the spectrum bands. Therefore, it is important to ensure that the new assignment does not create any trouble in the existing networks if the TSP is able to successfully procure its MWA carriers. To protect the same, the successful bidder should be provided with an option to retain the same frequencies in the band so that the TSP is not required to change the MWA equipment. Further, in case the TSPs buy

additional carriers, then it should have an option to choose the frequencies in the same band in which it holds the existing carriers.

44. **Harmonization of the MWA frequencies:** In order to achieve efficiencies and higher capacity, MWA spectrum should be harmonized while keeping in mind that no TSP is forced to change the hardware and suffer disturbance in the network for harmonization exercise.

45. **Conclusions**

1. **The only mode for assignment of spectrum in E-Band, V-Band, MWA and MWB bands should be auction.**
2. **All spectrum available with the Government should be put to auction.**
3. **The proposals of spectrum delicensing and unlicensed use should be rejected.**
4. **Spectrum leasing should be promoted for niche users or users requiring restricted spectrum as well as for Captive networks (except Indian Railways and Defence).**
5. **No point-to-point (P2P) allocation of spectrum should be done.**
6. **The valuation of spectrum should be rational and consistent with national goals and should promote maximum uptake of the spectrum.**
7. **The valuation of spectrum in E-band and V-band should be 50% of the of ADP of spectrum in mmWave spectrum.**
8. **The valuation of spectrum in MWA and MWB band should be determined with an analysis of current use cases and the fact that a large amount of spectrum is unutilized. Therefore, it should be at 50% of valuation of E-Band and V-Band spectrum.**
9. **Only the Unified License holders with appropriate authorization should be eligible to acquire the spectrum.**
10. **For E-band and V-band spectrum, access/internet services authorization should be required.**
11. **The roll-out obligations for E-band and V-band spectrum should be as per those for mmWave spectrum.**
12. **There should be no roll-out obligations for MWA and MWB spectrum bands.**
13. **The spectrum surrender provisions should be same for all spectrum bands.**
14. **The reserve price should be kept at 50% of the spectrum valuation.**
15. **All band in MWA/MWB shall be taken as one band for the purpose of bidding. However, for the purpose of assignment and harmonization, the bands should be treated as different bands.**
16. **The successful bidders should be allowed to retain their existing frequencies.**
17. **Successful bidder should have the first right of refusal to get the frequencies in the same band of their existing assignment.**
18. **Harmonization of MWA frequencies shall be done with minimal requirement of any change in hardware and software.**

Issue wise response:

Q1. What quantum of spectrum in different MWA and MWB frequency bands is required to meet the demand of TSPs with Access Service License/ Authorization? Whether MWA/ MWB spectrum is also required by TSPs having authorizations other than Access Service License/ authorization, and other entities (non-TSP, for non-commercial/ captive/ isolated use)? Information on present demand and likely demand after five years may kindly be provided as per the proforma given below with detailed justification:

(i) Present demand

Band	Quantum of spectrum required (per entity per LSA)		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	Other entities (non-TSP, for non-commercial/ captive/ isolated use)
6 GHz (5.925-6.425 GHz)			
7 GHz (7.125-7.425 GHz)			
13 GHz (12.750-13.250 GHz)			
15 GHz (14.5-15.5 GHz)			
18 GHz (17.7-19.7 GHz)			
21 GHz (21.2-23.6 GHz)			

(ii) Likely demand after five years

Band	Quantum of spectrum required (per entity per LSA)		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	Other entities (non-TSP, for non-commercial/ captive/ isolated use)
6 GHz (5.925-6.425 GHz)			
7 GHz (7.125-7.425 GHz)			

13 GHz (12.750-13.250 GHz)			
15 GHz (14.5-15.5 GHz)			
18 GHz (17.7-19.7 GHz)			
21 GHz (21.2-23.6 GHz)			

RJIL Response:

1. We submit that with technological advancements in telecom networks and the need for higher data traffic requirements in the data centric technologies like 5G & 6G, the spectrum needs in MWA and MWB frequency bands will inevitably evolve necessitating the need for a greater number of carriers in multiple spectrum bands over time. Moreover, the optical fibre, which is an optimal way of meeting the traffic backhaul requirements for these data centric technologies, faces with challenges and external dependencies that are linked with Right of Way (RoW) permissions thereby resulting wireless backhaul spectrum as the sole viable alternative for at many sites in India. Therefore, with increased data usage by customers in 5G & 6G networks, the non-availability of sufficient backhaul spectrum at these sites would severely affect the QoS and result in poor customer experience and reduced speed. Hence, we are of the view that the prescribed data table is not essential and instead all available spectrum with the government should be included in the auction for optimum utilization and foster new technologies.

2. This practice is in-line with established policies of spectrum auction for IMT services where the Authority has maintained a position over the years that **all spectrum identified for IMT use are made available for assignment through auction**.

3. In spectrum market economics there can never be a perfect balance of demand and supply. There will be cases where the demand will be far outstripping the supply, as was seem in auctions in 2010, 2014 etc. In other cases, the availability of spectrum and newer technologies will generate or re-generate demand for instance the spectrum in 700 MHz band and other sub-1-GHz bands.

4. We also submit that in view of evolving technologies and shortening technology cycles, all spectrum should be made available in a technology-neutral or service neutral manner. The successful bidder should be allowed to use the acquired spectrum flexibly for any type of network, be it access, carrier, terrestrial or satellite and any type of service, as per the scope of their UL authorizations and in accordance with the NFAP 2022.

Q2. Whether spectrum for MWA and MWB should be assigned for the entire LSA on an exclusive basis, or on Point-to-Point (P2P) link basis? Response may be provided separately for (i) TSPs with Access Service License/ Authorization, (ii)TSPs having authorizations other than Access Service License/ authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) in the table given below with detailed justification:

Microwave bands	Spectrum should be assigned for the entire LSA on an exclusive basis, or on P2P link basis for -		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	other entities (non-TSP, for non-commercial/ captive/ isolated use)
MWB (6/7 GHz)			
MWA (13/15/18/21 GHz)			

RJIL Response:

We submit that given the need for large number of link assignment is an inefficient method We reiterate our submission that the spectrum assignment should be free from any technology or service level differentiations. Thus, all spectrum, should be assigned through auction mode. Further, the spectrum auction should be conducted on LSA basis, as per the current practice. Block licensing via auctions for entire LSA provides certainty in network planning and operations, enabling various link configurations (Point-to-Point and Point-to-Multipoint) and avoiding link-by-link coordination issues.

Q3. Keeping in view the provisions of ITU's Radio Regulations on coexistence of terrestrial services and space-based communication services for sharing of the same frequency range, do you foresee any challenges in ensuring interference-free operation of terrestrial networks (i.e., MWA/ MWB point to point links in 6 GHz, 7 GHz, 13 GHz, and 18 GHz bands) and space-based communication networks using the same frequency range in the same geographical area? If so, what could be the measures to mitigate such challenges? Suggestions may kindly be made with justification.

RJIL Response:

We submit that Microwave spectrum use for terrestrial and space-based communication service is already co-existing and no major issues are observed. This is due to Fixed service is being shared on co-primary basis with other services, including

Satellite. Further, with the LSA wise allocation of the spectrum, we do not foresee any risk of interference. Whatever, minimal interference is observed, can be managed by mutual negotiations between the parties and WPC help can be sought in case of unresolvable issues.

Q4. What should be the carrier size for MWA and MWB carriers in each band viz. 6/7/13/15/18/21 GHz bands? Whether there is a need to prescribe a different carrier size based on different LSA categories or different user categories viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs with other than Access Service License/ Authorization and (iii) other users (non-TSP, for non-commercial/ captive/ isolated use)? If yes, suggestions may be made in the table given below with detailed justification.

Microwave bands	Carrier Size (in MHz) for-		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	other entities (non-TSP, for non-commercial/ captive/ isolated use)
MWB (6/7 GHz)			
MWA (13/15/18/21 GHz)			

RJIL Response:

1. We believe that the carrier sizes can be aligned to meet the requirements of new technologies to provide wider channel sizes to support data technologies like 5G and beyond, while maintaining the legacy requirements.

2. We do not agree with the proposal that larger carrier size should be provided only in LSAs with higher data consumption, as the national broadband proliferation objectives would imply that data usage is set to increase all across the country, and we cannot have any half measures. We agree with GSMA assessment that wider backhaul channel size is required to support higher data throughput under new technologies. However, in case the current channel size is to be maintained due to considerations pertaining to non-access service providers, we request the Authority to ensure that access service providers are assigned contiguous spectrum and allowed carrier aggregation of multiple carriers and are accorded preference in assignment. The proposed carrier size as below:

Microwave bands	Carrier Size (in MHz) for-		
	TSPs with Access Service License/ Authorization	**TSPs with other than Access Service License/ Authorization**	**other entities (non-TSP, for non-commercial/ captive/ isolated use)**
MWB (6/7 GHz)	28 MHz	28 MHz	28 MHz
MWA (13/15/18/21 GHz)	28 MHz	28 MHz	28 MHz

3. The block size for MWA and MWB spectrum in auction be kept as 28 MHz for all the entities with the minimum bid quantity for TSP with Access Service License/Authorization be kept as 2 blocks and the minimum bid quantity for the rest of the entities be kept as 1 block.

Q5. Whether there is a need to assign MWA and MWB carriers in such a way that if a TSP acquires more than one carrier in a band, all assigned carriers are contiguous, and assigned frequency range(s) can be catered through a single equipment? If yes, kindly provide details of the frequency range(s) supported by the available equipment in each band. Any other suggestion(s) may kindly be made with detailed justification?

RJIL Response:

1. Frequency spot assignment within a band should be determined by the final bidder ranking in the auction process while protecting the existing assignments. The bidder with the highest rank should be able to secure their preferred frequency slot in the band, followed by the bidder with the second-highest rank, and so on provided the rights of existing spectrum holders are protected, as also explained in detail in our response to the next question Q6. Further, the existing spectrum holder should have right of first refusal in assignment of the band in which they hold their existing spectrum.

2. The contiguity of spectrum is an important factor for its optimum utilization. If a bidder acquires more than one block, the entire spectrum should be assigned in a contiguous form basis availability. The WPC has gone through massive exercises in the past to deliver contiguity of spectrum to ensure optimum utilization. Therefore, contiguity of spectrum assignment in a band should be ensured at the outset wherever feasible in order to avoid lengthy harmonization exercises and TSPs should be assigned contiguous spectrum as far as possible.

Q6. For the existing service licensees holding MWA/ MWB carriers, whether there is a need to create some specific provisions (as discussed in para 2.38 of this CP) such that if the licensee is successful in acquiring the required number of carriers through auction/ assignment cycle, its services are not disrupted? If yes, kindly provide a detailed response with justification.

RJIL Response:

1. Yes, post auction the assignment of exact frequencies must protect the existing installation and ensure that the services are not disrupted. For the following methodology is recommended: -

    a. **The value of spectrum in each band of MWA is same for the existing operators who have already built their network using the link-budget for that band. Therefore, for the existing operators it is critical to get the same frequencies re-assigned instead of spectrum in other band even it has better propagation.**

    b. **Therefore, Auction of all MWA carriers shall be done as common band. Auction of the MWA bands separately may lead to gaming the auction process against the incumbent operators.**

    c. **Post auction, each successful bidder can opt for assignment of its existing frequencies to the extent procured through auction e.g. if a TSP is currently holding 8 carriers in 15 GHz band and procures 8 carriers then it should be assigned all 8 carriers in 15 GHz band. However, if it procures 10 carriers than it should be assigned 8 carriers in 15 GHz band. The remaining 2 carriers should be assigned as per the procedure explained in subsequent paras.**

    d. **If a TSP has bid more than its current holding, then it would be given preference in assignment of the additional carrier in the same band from the left-over frequencies in the band i.e. the carrier left after re-assignment of the currently held carriers in the band.**

    e. **If the demand of additional carriers is more than the left-over carriers, than it should be assigned as per the rank in auction.**

    f. **In case a TSP opts to move out of its current band, then the frequencies currently held by it in the band should be treated as left-over frequencies**

in that band. Such TSP should be assigned spectrum from the left-over frequencies of the other bands for which it submits its request.

g. The assignment of the left-over frequencies, to the in any band should be as per the rank of the TSPs in the auction.

Q7. Whether there is a need to review the existing ceiling on number of MWA carriers that can be held by a licensee? In case it is decided to review the ceiling on the number of MWA carriers that a licensee can hold,
(a) Whether a separate ceiling for each band (13 GHz/ 15 GHz/ 18 GHz/ 21 GHz) should be prescribed or an overall ceiling for MWA carriers taking all bands together?
(b) Whether different ceilings based on the service area category i.e., Metro/ Category 'A' Circles/ Category 'B' Circles/ Category 'C' Circles, needs to be prescribed?
(c) What should be the ceiling in terms of the number of carriers of 28 MHz per licensee in each case i.e., band-wise ceiling and overall ceiling for each service area category for -
(i) TSPs with Access Service License/ Authorization , and
(ii) TSPs with other than Access Service License/ Authorization?
(d) Any other relevant suggestion may be made with justification. Kindly justify your response.
And
Q8. In case it is decided to assign MWB carriers exclusively on LSA basis to the TSPs, whether there is a need to prescribe any ceiling on the maximum number of MWB carriers that can be held by a TSP? Kindly justify your response.
And
Q9. In case it is decided to prescribe a ceiling on the number of MWB carriers that a TSP can hold,
(a) Whether separate ceiling for each band (6 GHz, 7 GHz (7.125-7.425 GHz) and 7 GHz (7.425-7.725 GHz)) should be prescribed or an overall ceiling for MWB carriers should be prescribed?
(b) Whether different ceiling based on the service area category i.e., Metro/ Category 'A' Circles/ Category 'B' Circles/ Category 'C' Circles, needs to be provided?
(c) What should be the ceiling in terms of number of carriers of 28 MHz per licensee in each case i.e., band-wise ceiling and overall ceiling for each service area category for
(i) TSPs with Access Service License/ Authorization , and
(ii) TSPs with other than Access Service License/ Authorization?
(d) Any other relevant suggestion may be made with justification.

RJIL Response:

1. We do not support in-band spectrum caps or carrier ceilings as with increased focus on fiberization, there is no case of hoarding this MWA/MWB spectrum procured

through auction, as post fiberization this will be required for redundancy purposes only.

2. Nevertheless, in order to ensure that sufficient spectrum is available for all service providers, an overall cap of 40% of total spectrum available for MWA & MWB be considered, if deemed necessary.

Q10. Which methodology should be used for assignment of MWA carriers? Response may be provided in the table given below:

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
(i) TSPs with Access Service License/ Authorization		
(ii) TSPs with other than Access Service License/ authorization		
(iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use)		

RJIL Response:

1. The Microwave 'line-of-sight' wireless communication technology for wireless backhaul is critical to provide high speed wireless connections that can send and receive voice, video, and data information. MWA and MWB carriers are used to connect the network nodes for backhauling the traffic generated by the access network and are an integral part of modern communication networks. This spectrum is also irreplaceable in disaster situations and Cell on Wheels (COW) are connected to the network only with the help of MWA/MWB.

2. Further, global analysis, including the GSMA-AIB Research report on "Wireless Backhaul Evolution-Delivering next-generation connectivity" of February 2021, also implies that that sufficient number of high-capacity microwave backhaul carriers in multiple bands are vital for maintaining the traffic and speed in near

and mid-term future and that there is a need to make available more and more MWA and MWB spectrum for wireless backhaul services.

3. However, While the TSPs requires more backhaul spectrum, only 345 out of a total 1699 available MWA (20%) carriers are offered to existing TSPs, and remaining carriers do not generate any revenue to exchequer. The TSPs are wary of acquiring more carriers on administrative basis due to prohibitively high cost in the form of revenue share. Such high cost does not make any business case for acquiring additional spectrum for backhaul. Thus, auction of all available spectrum in these bands, at reasonable and market driven prices, is imperative to facilitate high quality services and to maximize spectrum utilization and benefits.

4. In view of the above, our submissions are detailed in following table.

<table>
<tr><th colspan="2">User category</th><th>Assignment methodology [Auction/ Administrative/ Any other (please specify)]</th><th>Justification</th></tr>
<tr><td>(i)</td><td>TSPs with Access Service License/ Authorization</td><td rowspan="2">Auction</td><td rowspan="3">In compliance with Hon’ble Supreme Court decision in 2G case in 2012, all spectrum assignment for commercial use should be through auction. The Microwave spectrum is commercial spectrum and is used in commercial operations, therefore only methodology for assigning this spectrum should be through auction.

We further submit that the national objective to subserve the common good is best achieved when the spectrum assignment to all commercial enterprise is done in a fair and transparent manner so as to derive its optimum value through transparent and fair auction.</td></tr>
<tr><td>(ii)</td><td>TSPs with other than Access Service License/ authorization</td></tr>
<tr><td>(iii)</td><td>Other entities (non-TSP, for non-commercial/ captive/ isolated use)</td><td>Auction/Leasing for all non-TSP, commercial, captive, or isolated use.</td></tr>
</table>

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
		It is pertinent to note that majority of the users/licensees requiring this spectrum are either private enterprises or in case of PSUs are providing commercial services in competition with private sector. Thus, from competition and transparency perspective, the spectrum should be assigned through auction only. This will also ensure investor's confidence and bring more investments. The spectrum auction, besides being the only legally tenable mean of assigning spectrum is also the only mode of spectrum assignment that delivers the full promise of technology to the actual owners of the spectrum i.e., consumers.

Q11. In case you are of the opinion that certain user categories should be assigned MWA carrier P2P links by any methodology other than auction, should some MWA carriers be earmarked for such users? If yes, how many carriers should be earmarked for each of such user category? Kindly justify your response.

RJIL Response:

1. We do not support P2P link assignment or non-auction-based spectrum assignment to any category of users. There should not be any differentiation in the assignment methodology for entities using the same spectrum bands and the steadfast policy of both

the Authority and the Government to conduct auctions should be maintained for every spectrum band utilized for commercial telecommunication services.

2. Further, the spectrum use by majority of user categories are not distinct from broadband services, they either fall under the subsets (e.g. VPN, MPLS, CNPN etc) of the broadband services or are substitutes (e.g. public Wi-Fi, GMPCS, VSAT) for IMT based broadband services. Hence, there is no requirement for a separate assignment methodology under the guise of usage by other user categories.

Q12.Which methodology should be used for assignment of MWB carriers? The response may be provided in the table given below:

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
(i) TSPs with Access Service License/ Authorization		
(ii) TSPs with other than Access Service License/ authorization		
(iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use)		

RJIL Response:

We reiterate our submissions to Q10 i.e. all available MWB carriers should be assigned only through auction method to only TSPs with TSPs allowed to lease spectrum to other entities (except Indian Railways and Defence).

Q13. In case you are of the opinion that certain user categories should be assigned MWB carrier by any methodology other than auction, should some MWB carriers be earmarked for such users? If yes, how many carriers should be earmarked for such users? Kindly justify your response.

RJIL Response:

We reiterate our submissions that all spectrum assignment for commercial public/private networks should be through auction method only and allow TSPs to lease out spectrum to other entities including captive users (except Indian Railways and Defence).

Q14. In case it is decided to assign MWA/MWB carriers to the TSPs with Access Service License/ Authorization through auction and to continue the existing P2P assignment of MWA/MWB carriers for TSPs other than Access Service License/ Authorization, who may be requiring to establish only a few links, what threshold limit in terms of number of links, may be prescribed, beyond which, the TSPs with other than Access Service License/ Authorization should also be required to acquire MWA/ MWB carriers through auction? Kindly justify your response.

And

Q15. In case it is decided to assign MWA/ MWB carriers to all types of licensed TSPs through auction, should such TSPs be permitted to lease their spectrum acquired through auction, on P2P link basis, to other TSPs and other entities (non-TSP, for non-commercial/ captive/ isolated use) who may be requiring establishing only a few links? If yes, (a) suggest a mechanism and regulatory framework for such leasing arrangement. (b) Do you foresee any regulatory issues and potential misuse of such a regime? If yes, what measures could be put in place to mitigate the concerns? Kindly justify your response.

RJIL Response:

1. We submit that any direct assignment of MWA/MWB carriers to entities requiring spectrum only in a smaller area to establish few links will inevitably lead to significant fragmentation and inefficient spectrum utilization. Permitting the spectrum to be remained utilized in the remaining areas of the LSA, where some spectrum has been assigned to a smaller operator, would result in substantial spectrum wastage in the LSA. Further, assignment of same frequencies in the LSA to multiple operators with smaller boundaries will lead to huge number of disputes which would need resolution by Government on day-to-day basis.

2. Hence, we do not agree with the proposal of P2P assignment and submit that all interested parties should participate in the transparent auction to avail spectrum on LSA basis at market determined price. Deciding the number of links for establishing a threshold would be an administrative process and includes arbitrary decision making. Hence, we suggest not to keep any threshold limits or neither permit P2P assignments and rather keep all the available links in an open and transparent auction process, so that all entities have equal opportunity to participate in the acquisition processes.

3. To cater the spectrum needs of entities who require in smaller areas and only few links can avail the spectrum resources through leasing agreement. Therefore, Government should enable an optimum mode to address the spectrum needs of these entities by allowing them to lease spectrum from the entities who have procured spectrum on LSA basis in auction. Such an arrangement, through the private contract between the parties, will lead to interference free usage by effectively mitigating the interference mitigation between the parties themselves and without any involvement of Government, hence, will be easy to administer. For addressing transparency requirements, the government can mandate the TSPs/ entities who acquired auction spectrum to publish a reference leasing agreement (RLA).

4. Hence, we submit that spectrum leasing is an important mode of meeting the spectrum requirements of stakeholders with limited spectrum requirements or for those with spectrum requirement in niche areas. The Government has already recognized its importance by keeping it as one of the modes for availing spectrum under the CNPN guidelines dated 27th June 2022.

5. We submit that spectrum leasing should be permitted for all spectrum bands auctioned by the Government. The right for leasing will be a boon for a successful bidder as this will help decentralizing the rights to use auctioned spectrum under leasing arrangements at LSA and sub-LSA level and would help all stakeholders to avail spectrum at market price while also decentralizing the interference management, as the lessor will be responsible for managing interference, without any requirement of WPC intervention.

6. As highlighted in our response to the consultation paper on "Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing" dated 13th January 2023, GSMA in its paper on 'Spectrum leasing in the 5G era'[2] has delved extensively on global implementation of spectrum leasing and how this will help proliferate 5G faster while delivering immense economic benefits. GSMA deems that on one hand Spectrum leasing delivers economic benefits to businesses and on the other hand it is an effective and efficient way for regulators to manage spectrum for greater common good, whereas the gain for mobile operators is optimizing the returns of spectrum holdings.

7. Therefore, progressive spectrum leasing policies should be promoted, and licensees should be permitted to leasing of spectrum to all eligible service providers as well as captive users so that the spectrum requirements of all entities can be met in equitable manner.

[2] https://www.gsma.com/spectrum/wp-content/uploads/2022/01/Spectrum-Leasing-5G-Era.pdf

Q16. In case MWA/MWB carriers are decided to be assigned through auction,
(a) Should the auction be conducted based on Simultaneous Multiple Rounds Ascending Auction (SMRA) method as adopted for IMT spectrum auction? Any other auction method may be suggested with detailed justification.
(b) what quantum of spectrum in each band (6/7/13/15/18/21 GHz) should be put to auction? Kindly justify your response.

RJIL Response:

1. We submit that the Simultaneous Multiple Round Auction (SMRA) is an optimum auction format that helps discover true market value with multiple rounds of bidding with systematic price escalations. This model provides flexibility for the bidders and leads to efficient allocation of resources. This is a successful and most preferable model of spectrum auction in India and should be persisted for MWA and MWB Auction.

2. In line with the Authority's established position, most recently reiterated vide its letter dated 01st September 2023 to DoT, all available spectrum should be put to auction.

Q17. In case it is decided to assign MWA and MWB carriers through auction,
(a) What should be the validity period of the assigned spectrum?
(b) Whether there is a need to create a provision for surrender of MWA / MWB carriers? If yes, what should be the lock-in period and other associated terms and conditions? Response may be given for each user category viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs with other than Access Service License/ Authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

1. The validity period of MWA and MWB spectrum assignment should be 20 years, in line with all other IMT spectrum being put to auction. The validity should be increased to 30 years, as and when the validity of IMT spectrum assignment is done so.

2. The guidelines for surrender of access have already been notified by the DoT on 15th June 2022. As the backhaul spectrum is also used in same communication networks, there is a need to provide provisions for surrender of backhaul spectrum as well. We submit that in order to ensure level playing field and predictability in regulations, the guidelines and lock-in period for surrender of backhaul spectrum should also be same as for access spectrum.

Q18. In case it is decided to continue with the existing methodology of assignment of MWA/ MWB carriers, whether any change in the validity period, or process for augmentation/ surrender of carriers is required to be made? If yes, suggestions may be made with detailed justification.

RJIL Response:

We do not support existing methodology for assignment of MWA/ MWB carriers, as this is anti-new entrant, and the charges are not market discovered and are on higher side resulting in lesser uptake of carriers with more than 80% of carriers remaining still unutilized. Therefore, we reiterate our submissions that the assignment methodology needs to be upgraded to a market driven transparent method of auction. Our submissions on all other related issues are available in response to Q17.

Q19. What should be the eligibility conditions and associated conditions for assignment of spectrum in 6/ 7/ 13/ 15/ 18/ 21 GHz bands? Response may kindly be given for each user category viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs with other than Access Service License/ Authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

1. We submit that this spectrum will be used to offer communication services within the scope of Section 4 of Indian Telegraph Act and therefore should be offered only under a suitable authorization under Unified License. Thus, the eligibility for assignment of this spectrum should be as per the Notice Inviting Applications for spectrum auction.

2. Any licensee that either holds a suitable UASL/ UL authorization or any licensee that fulfils the eligibility criteria for obtaining a Unified License with suitable authorization and any entity that gives an undertaking to obtain a Unified License with said authorization should be eligible to participate in the spectrum auction.

Q20. Whether there is a need to prescribe any roll out obligations for MWA/ MWB carrier assignment? Should the roll out obligations be linked to the number of carriers assigned to a TSP? Kindly justify your response.
And
Q21. In case it is decided to prescribe roll out conditions, what should be the roll-out obligations associated with the assignment of spectrum in 6/ 7/ 13/ 15/ 18/ 21 GHz bands? What provisions should be prescribed for non-fulfilment of the prescribed roll-out obligations? Response may kindly be given for each user category viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs with other than Access Service License/

Authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

As this spectrum will be essentially used for backhaul purpose, and the licensees are already required to comply with the roll-out obligations for the access services, there is no need to prescribe roll-out obligations associated with the assignment of spectrum in 6/ 7/ 13/ 15/ 18/ 21 GHz bands.

Q22. Any other suggestions relevant to assignment of spectrum for MWA and MWB in 6/ 7/ 13/ 15/ 18/ 21 GHz frequency bands, may kindly be made with detailed justification.

RJIL Response: None

Q23. What quantum of spectrum in E-band (71-76 / 81-86 GHz) and V-band (57-64 GHz) is required to meet the demand of TSPs with Access Service License/ Authorization? Whether spectrum in E-band and V-band is also required by the TSPs other than Access Service License/ Authorizations, and other entities (non-TSP, for non-commercial/ captive/ isolated use)? Information on present demand and likely demand after five years may kindly be provided as per the proforma given below:

(i) Present demand

Band	Quantum of spectrum required (per entity per LSA)		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	other entities (non-TSP, for non-commercial/ captive/ isolated use)
E-band (71-76/81-86 GHz)			
V-band (57-64 GHz)			

(ii) Likely demand after five years

Band	Quantum of spectrum required (per entity per LSA)		
	TSPs with Access Service License/ Authorization	TSPs with other than Access Service License/ Authorization	other entities (non-TSP, for non-commercial/ captive/ isolated use)

E-band (71-76/81-86 GHz)			
V-band (57-64 GHz)			

RJIL Response:

1. We reiterate our submissions in response to Q1 and submit that irrespective of the current demand and prospective demand, the Authority's well established and advantageous policy of conducting auctions for all available access spectrum should be continued with.

2. We submit that it is imperative to maintain this advantageous approach, without deviating on the basis of current/future estimated service requirements. Making accurate estimations in this regard is challenging, as spectrum needs will inevitably evolve with technological advancements. Hence, there is no necessity to gather data as per the prescribed table, and instead, all available spectrum should be included in the upcoming auction.

Q24. Whether spectrum in E-band and V-band should be assigned exclusively on an LSA-basis, or on P2P link basis? Response may be provided separately for (i) TSPs with Access Service License/ Authorization, (ii) TSPs other than Access Service License/ Authorization, and (iii) other users (non-TSP, for non-commercial/ captive/ isolated use) in the table given below with detailed justification.

Microwave bands	**Spectrum should be assigned for the entire LSA on exclusive basis, or on P2P link basis for -**		
	TSPs with Access Service License/ Authorization	**TSPs with other than Access Service License/ Authorization**	**other entities (non-TSP, for non-commercial/ captive/ isolated use)**
E-band (71-76/81-86 GHz)			
V-band (57-64 GHz)			

RJIL Response:

1. We submit that considering the value of spectrum in these bands as Integrated Access Backhaul (IAB) and use-cases for 5G services, it is imperative that these bands be assigned only through auction for both TSPs and other entities. Any demands for

assignment of E&V band on link-by-link basis lacks legal validity and presents technical challenges.

2. Auction is the optimum mode of assigning the spectrum. The Hon'ble Supreme Court in its judgment dated 02.02.2012 in Writ petition (Civil) No.423 of 2010 has held that for scarce natural resources with high demand and valuation the Auctions are the best and most transparent way for "price discovery" of such natural resource.

   "..In our view, a duly publicised auction conducted fairly and impartially is perhaps the best method for discharging this burden and the methods like first-come-first-served when used for alienation of natural resources/public property are likely to be misused by unscrupulous people who are only interested in garnering maximum financial benefit and have no respect for the constitutional ethos and values. In other words, ***while transferring or alienating the natural resources, the State is duty bound to adopt the method of auction*** *by giving wide publicity so that all eligible persons can participate in the process."*

3. Any assignment of E&V band on link-by-link basis will only result in adoption of first-come-first-served principle, which is already denounced by Hon'ble Supreme court. Hence, we submit that all available blocks in both E band and V band spectrum, should be assigned only through auction on LSA basis. Further, the block licensing via auctions for entire LSA provides certainty in network planning and operations, enabling various link configurations (Point-to-Point and Point-to-Multipoint) and avoiding link-by-link coordination issues. In fact, recognizing these coordination issues and infeasibility of link-by-link assignments, the government has already decided, implemented, and offered E-band carriers to TSPs on LSA basis.

4. We agree that there are multiple use cases of this spectrum and the interest by a wide spectrum of service providers implies that the Authority may be inventive with the spectrum leasing guidelines.

5. The Authority should leverage the benefits of decentralizing the spectrum usage to cater all types of use cases. As submitted earlier in our response to consultation paper on "Auction of Spectrum in frequency bands identified for IMT/5G", this can be done by permitting the Unified license holders to lease the auction acquired spectrum to other unified license holders with appropriate authorization.

6. We submit that with this innovative approach, the entities desirous of using this spectrum to build public communication networks can bid directly for spectrum in auction, while the entities interested in spectrum for Captive use (except Indian Railways and Defence) can avail the same through spectrum leasing. It is pertinent to

note that DOT had allowed for Captive networks and spectrum allotment to them as DOT was unable to meet their requirements at that time. In today's scenario, the TSPs with their state of art networks are able to cater to their requirements. Leasing of Spectrum by TSPs can address any specific requirements for captive use.

7. Leasing arrangement will also ensure that the Licensee will be responsible to ensure optimum and interference free use of this spectrum and all interference issues will be managed and mitigated effectively by the licensees, without any requirement of WPC intervention.

8. We submit that possible revenue through leasing would ensure greater competition for right to use this spectrum, as these measures will provide viable business models for small and niche players.

Q25. Do you agree that the issues relating to the assignment of E-band and V-band for space-based communication services and its coexistence with terrestrial networks may be taken up at a later date? If not, the concerns and measures to overcome such concerns may kindly be suggested with relevant details.

RJIL Response:

We reiterate our submissions in previous section that with auction based and LSA wise allocation of the spectrum, we do not foresee any risk of interference. Whatever, minimal interference is observed, can be managed by mutual negotiations between the parties and WPC help can be sought in case of unresolvable issues. The spectrum put to auction should be permitted for flexible use between satellite, terrestrial and backhaul networks by the successful bidder while ensuring no interference to the assignees of the adjacent or any other bands.

Q26. Whether it will be appropriate to continue with the Frequency Division Duplexing (FDD) based configuration as adopted for the provisional assignment of E-band carriers or Time Division Duplexing (TDD) based configuration should be adopted? Kindly justify your response.
And
Q27. Whether Frequency Division Duplexing (FDD) or Time Division Duplexing (TDD) based configuration should be adopted for V-band carriers? In case you are of the opinion that FDD based configuration should be adopted, detailed submissions may be made with band plan, ecosystem availability, and international scenario.

RJIL Response:

As noted by the Authority, ITU recommendations give flexibility to the administration to decide about deployment in TDD, FDD or their mixed use of the band. Thus, both FDD and TDD configuration arrangements are possible. However, for E-band, globally, FDD configuration with duplex separation of 10 GHz has been preferred. Indian assignment in E-band is also on global lines. Further, the contiguous FDD assignment is less interference prone and has been successfully tested with the provisional assignment of spectrum in E-Band to the service providers and the same should be continued for E-Band. However, in case of V-Band, TDD band plan should be followed in line with global practice.

Q28. What should be the carrier size for assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz)? Whether there is a need to prescribe a different carrier size based on different LSA categories or different user categories viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs other than Access Service License/ Authorization and (iii) other users (non-TSP, for non-commercial/ captive/ isolated use)? If yes, suggestions may be made with detailed justification.

RJIL Response:

We agree with the Authority's analysis that for optimum utilization, typical channel size for E-band is 500/1000 MHz and for V-band it is 100 MHz. As the existing assignment for E-Band is on a block size of 250 MHz, the same should be continued with, while for V-band this can be kept at 100 MHz, in order to provide sufficient flexibility to the TSPs.

Q29. Whether there is a need to assign spectrum in E-band and V-band in such a way that if a TSP acquires more than one carrier, all the assigned carriers to a TSP are contiguous? Kindly justify your response.

RJIL Response:

1. Frequency spot assignment within a band should be determined by the final bidder ranking in the auction process. The bidder with the highest rank should be able to secure their preferred frequency slot in the band, followed by the bidder with the second-highest rank, and so on.

2. As mentioned in the previous section, contiguity of spectrum is an important factor for its optimum utilization. If a bidder acquires more than one block, the entire spectrum should be assigned in a contiguous form basis availability. The WPC has gone

through massive exercises in the past to deliver contiguity of spectrum to ensure optimum utilization. Therefore, contiguity of spectrum assignment should be ensured wherever feasible.

Q30. Since E-band carriers will be reassigned as per the assignment methodology that will be finalized, to avoid any disruption of services to the consumers of the existing TSPs holding E-band carriers, whether there is a need to create a provision such that the TSP is given a choice to retain the same frequency carrier as long as such TSP is able to acquire the carriers in the new regime? Kindly justify your response.

RJIL Response:

We submit that the current assignment of E-band spectrum is provisional and as noted by the Authority the OEMs understand that generally E-band equipment support the entire band. Therefore, unlike spectrum in MWA and MWB bands, there should not be consideration of previous assignment post auction in case of E-band or V-band spectrum. The new assignment priorities should be as per auction framework, unencumbered by the previous assignment. However, the TSPs should be permitted to swap their assignment basis mutual agreement. Further, in case a service provider can justify serious service disruption, the Government may provide a 3-month timeline to recalibrate the equipment for new frequencies before effecting the change in assignment for existing users.

Q31. Whether there is a need to prescribe the maximum number of carriers that can be held by a TSP in E-band and V-band? Kindly justify your response.
And
Q32. In case it is decided to prescribe a ceiling on the number of carriers that a licensee can hold in E-band and V-band,

(a) Whether different ceilings based on the service area category i.e., Metro/ Category 'A' Circles/ Category 'B' Circles/ Category 'C' Circles, need to be prescribed?

(b) Considering a carrier of 250 MHz (paired) spectrum for E-band, and 50 MHz (unpaired) spectrum for V-band, what should be the ceiling in terms of the number of carriers per licensee for each service area category for

(i) TSPs with access service License/ authorization holding IMT spectrum,

(ii) TSPs with access service License/ authorization not holding IMT spectrum, and

(iii) TSPs with other than Access Service License/ Authorization?

(c) Any other relevant suggestion may be made with justification.

RJIL Response:

1. As mentioned above, we do not support in-band spectrum caps or carrier ceilings. case. We believe that there is no possibility of hoarding this spectrum with use case in IAB and 5G densification at market price. Therefore, no in-band cap is recommended.

2. Further, in order to ensure that sufficient spectrum is available for all service providers, an overall cap of 40% of total carriers available for E Band and V Band be considered, if deemed necessary.

Q33. Which methodology should be used for assignment of spectrum in E-band and V-band? Response may be provided in the table given below:

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
(i) TSPs with Access Service License/ Authorization		
(ii) TSPs with other than Access Service License/ authorization		
(iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use)		

RJIL Response:

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
(i) TSPs with Access Service License/ Authorization	**Auction**	As mentioned before, a decision has already been taken to auction the spectrum in E-band and V-Band and any further
(ii) TSPs with other than Access		

User category		Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
	Service License/ authorization		discussion on this becomes irrelevant.
(iii)	**Other entities (non-TSP, for non-commercial/ captive/ isolated use)**		E-Band spectrum is suitable for high capacity backhaul for mobile 4G/5G mobile networks and also suitable as access spectrum for delivering broadband services to the end users**. It can be used for connecting enterprise buildings with high-capacity links. It is already identified as backhaul for 5G and is also deemed useful for Integrated Access Backhaul (IAB) under 5G enabling flexible and dense network deployments.** V-Band is also suitable as high capacity backhaul spectrum for mobile 4G/5G mobile network and also **suitable as Access Spectrum for 5G for connecting enterprise building with high-capacity access links. WRC-19 has already identified the upper portion of V band (66-71 GHz) for IMT / 5G services, and no country has delicensed this band post that.** The lower portion of spectrum is also being considered for IMT (5G/6G) services now. **3GPP has**

User category	Assignment methodology [Auction/ Administrative/ Any other (please specify)]	Justification
		already identified 52.6-71 GHz for 5G NR (New Radio). Further, in compliance with Hon'ble Supreme Court decision in 2G case in 2012, all spectrum assignment for commercial use should be through auction. The spectrum in E-Band and V-Band is commercial spectrum and should be auctioned accordingly.

Q34. In case you are of the opinion that certain user categories should be assigned spectrum in E-band and V-band for P2P links by any methodology other than auction, should some carriers be earmarked for such users? If yes, how many carriers should be earmarked for such users? Kindly justify your response.

And

Q35. In case it is decided to assign spectrum in E & V bands to the TSPs with Access Service License/ Authorization through auction and adopt P2P links assignment for TSPs other than Access Service License/ Authorization, who may be requiring to establish only a few links, what threshold limit in terms of number of links, may be prescribed, beyond which, the TSPs with other than Access Service License/ Authorization should be required to acquire spectrum in E-band and V-band bands through auction? Kindly justify your response.

RJIL Response:

1. The spectrum use by majority of user categories are not distinct from broadband services, they either fall under the subsets (e.g. VPN, MPLS, CNPN etc) of the broadband services or are substitutes (e.g. public Wi-Fi, GMPCS, VSAT) for IMT based broadband services. Hence, there is no requirement for a separate assignment methodology under the guise of usage by other user categories.

2. Hence, we do not agree with this proposition of assigning P2P links by any other methodology and we submit that all spectrum in E-Band and V-Band should be

auctioned, in line with the decision already taken by the Government, as evidenced from the reference to the Authority.

3. Deciding the number of links for establishing a threshold would be an administrative process and includes arbitrary decision making. Hence, we suggest not to keep any threshold limits for P2P assignment and rather keep all the available links in an open & transparent auction process, so that all entities have equal opportunity to participate in the acquisition processes.

4. The Authority should completely reject any other mode for assigning this spectrum, as the same would be not only legally untenable but also encourages favoritism, non-level playing field, violate "Same Service Same Rule" principle apart from coming at a great loss to the exchequer; causing technical issues like interference; bringing in inherent inefficiencies and is detrimental to investor's confidence.

5. We submit that any direct licensing of E&V band to the entities requiring spectrum in a smaller area to establish few links will inevitably lead to significant fragmentation and inefficient spectrum utilization. Permitting the spectrum to be remained utilized in the remaining areas of the LSA, where some spectrum has been assigned to a smaller operator, would result in substantial spectrum wastage in the LSA. Further, assignment of same frequencies in the LSA to multiple operators with smaller boundaries will lead to huge number of disputes which would need resolution by Government on day-to-day basis.

6. Hence, a progressive spectrum leasing policy should be promoted and licensees who acquire spectrum on LSA basis in auction should be permitted to lease spectrum to other entities who require spectrum in smaller areas for establishing few links. Such an arrangement, through the private contract between the parties, will lead to interference free usage by effectively mitigating the interference mitigation between the parties themselves and without any involvement of Government, hence, will be easy to administer.

Q36. In case it is decided to assign spectrum in E & V bands to all the TSPs through auction, should such TSPs be permitted to lease their spectrum acquired through auction, on P2P link basis, to the TSPs and other entities for non-commercial/ captive/ isolated use, who may be requiring to establish only a few links? What could be the regulatory issues and potential misuse of such a regime? What measures could be put in place to mitigate the concerns? Kindly justify your response.

RJIL Response:

1. We reiterate our submission in response to Q10 and submit that the spectrum leasing is an important mode of meeting the spectrum requirements of stakeholders with need for limited spectrum requirements or for those with spectrum requirement in niche areas and the leasing should be permitted for the spectrum acquired in E-Band and V-Band through auction.

2. We do not foresee any possibility of misuse of this provision for a spectrum acquired at market price, in fact the secondary markets are booming in economies like USA. Further, with transparency requirements any possible misuse can be prevented.

Q37. In case it is decided to assign spectrum in E-band (71-76/ 81-86 GHz) and V-band (57-64 GHz) on an exclusive basis, should the spectrum be assigned on an LSA basis, or pan-India basis or for any other geographic area should be defined? Kindly justify your response.

RJIL Response:

1. We submit that while the national level spectrum assignment is the ultimate goal under the complete unification of the Unified License, however the current service licenses continue to be on LSA basis and hence the LSA basis assignment should suffice for the purpose of assignment of spectrum in E-band and V-band.

2. As the only legally and technically possible mode of this spectrum is auction based, there is no case for non-exclusive assignments.

Q38. What should be the scope of services/ usages for spectrum in E-band (71-76/ 81-86 GHz) and V-band (57-64 GHz) assigned through auction or any other assignment methodology? Kindly justify your response.

RJIL Response:

This spectrum will be essentially used with access services only, and any interested bidder should be required to obtain access/Internet services authorization under the Unified License. Therefore, the scope of service for access/internet services authorization will apply.

Q39. In case spectrum in E-band and V-band is decided to be assigned through auction, (a) Should the auction be conducted based on Simultaneous Multiple Rounds Ascending Auction (SMRA) method as adopted for IMT spectrum auction? Any other auction method

may be suggested with detailed justification. (b) What quantum of spectrum in each band should be put to auction? Kindly justify your response.

RJIL Response:

1. We reiterate our submissions on using the most successful model in India i.e., Simultaneous Multiple Round Auction (SMRA), as this is an optimum auction format that helps discover true market value with multiple rounds of bidding with systematic price escalations. This model provides flexibility for the bidders and leads to efficient allocation of resources. This is a successful and most preferable model of spectrum auction in India and should be persisted for MWA and MWB Auction.

2. Further, in line with the Authority's established position, recently reiterated vide its letter dated 01st September 2023 to DoT, all available spectrum should be put to auction.

Q40. In case it is decided to assign spectrum in E & V bands through auction,
(a) What should be the validity period?
(b) Whether there is a need to create a provision for surrender of E & V band? If yes, what should be the lock-in period and other terms and conditions? Response may be given for each user category viz. (i) TSPs with Access Service License/ authorization, (ii) TSPs with other than Access Service License/ authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

1. The validity period for spectrum in E-band and V-band should be for 20 years, in line with all other IMT spectrum being put to auction. The validity should be increased to 30 years, in compliance with the Cabinet decision, as and when optimum model for 30-year valuation is discovered the validity of IMT spectrum assignment is extended to 30 years.

2. The guidelines for surrender of access spectrum have already been notified by the DoT on 15th June 2022. As the E-Band and V-Band spectrum will also be used in same communication networks, there is a need to for new provisions for surrender of backhaul spectrum as well. We submit that in order to ensure level playing field and predictability in regulations, the guidelines and lock-in period for surrender of spectrum in E-band and V-band should also be same as specified for access spectrum.

Q41. In case it is decided to assign spectrum in E-band and V-band through any methodology other than auction, what should be the validity period, process for augmentation/

surrender of carriers, and other terms and conditions? Suggestions may be made with detailed justification.

And

Q45. Whether it is feasible to allow low powered indoor consumer device-to-consumer device usages on license-exempt basis in V-band (57-64 GHz), in parallel to use of the auction acquired spectrum by telecom service providers for establishment of terrestrial and/ or satellite-based telecom networks? If yes, whether it should be permitted? Kindly justify your response.

And

Q46. In case it is decided to allow low powered indoor consumer device-to-consumer device usages on license-exempt basis in V-band (57-64 GHz),

(a) Whether it should be permitted in entire band or part of the band? Kindly provide detailed response including the frequency carriers, which should be considered for license exemption with justification.

(b) Whether there is a need to define such indoor use? If yes, what should be the definition for such indoor use?

(c) What technical parameters should be prescribed including EIRP limits? Suggestions may kindly be made with supporting justification and international scenario.

RJIL Response:

1. As highlighted before, a decision to auction this spectrum has already been taken by the Government and we do not support any other methodology for assignment of E-band and V-band spectrum. We are aware that there is a demand to delicense V-band for use in low powered indoor device to device communication and public Wi-Fi networks. However, the same is not justified, as public Wi-Fi, even without full mobility and only hotspot coverage will be directly competing with 5G and would be a substitutable broadband service and thus should only be provided through licensed spectrum only following principle of “Same Service Same Rule”.

2. The delicensed use of V band spectrum would result in creation of alternative high speed data service to IMT (such as Wi-Fi 6 /Wi-Fi 7) enabling dense carrier grade networks for unlicensed entities to compete with TSPs operating their networks on licensed spectrum without any accountability for national security, QoS, tariffs or consumer interests. This results in distortion of the level playing field, cannibalization of TSPs revenue, and negatively impacting the telecom sector and investor confidence.

3. Further, wide and indiscriminate adoption of delicensed spectrum will cause serious interference issues thus rendering these bands technically unusable for 5G. The Authority should also bear in mind that de-licensing of spectrum is a one-way

irreversible process and any requests for delicensing should undergo a careful analysis and study of demand, need, competitive landscape, existing investments, maintenance of level playing field etc.

4. While the upper part-of the V-band i.e. 66 GHz to 71 GHz band is has already been identified for IMT in WRC-19. It is likely that the remaining part of V-band i.e. 52.6 GHz to 66 GHz is also likely to be identified for IMT and therefore if any part of this spectrum is delicensed, it will cause serious conflict with the identification of IMT It is pertinent to mention here that while upper part-of the V-band i.e. 66 GHz to 71 GHz has already been identified for IMT in WRC-19. It is also likely that the remaining part of V-band i.e. 52.6 GHz to 66 GHz is also likely to be identified for IMT and therefore if any part of this spectrum is delicensed, it will cause serious conflict with identification of IMT. This is established by the fact that countries which have delicensed entire 6 GHz band for Wi-Fi services are now facing difficulty to reverse their decision when a large part of the band (i.e. 6.425 GHz to 7.025 GHz) is being considered for IMT in WRC-23.

Q42. What should be the eligibility conditions and associated conditions for assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz)? Response may be given for each user category viz. (i) TSPs with Access Service License/ authorization, (ii) TSPs with other than Access Service License/ authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

1. As submitted before, this spectrum will be used to offer data services and backhaul communication services within the scope of Section 4 of Indian Telegraph Act and therefore should be offered only under access/internet services authorization under Unified License. Thus, the eligibility for assignment of this spectrum should be as per the Notice Inviting Applications for spectrum auction.

2. Thus, any licensee that either holds an access/internet services UASL/ UL authorization or any licensee that fulfils the eligibility criteria for obtaining a Unified License with access/internet services authorization and gives an undertaking to obtain a Unified License with access/internet services authorization should be eligible to participate in the spectrum auction.

Q43. Whether there is a need to prescribe any roll out obligations for spectrum in E-band and V-band? Should the roll out obligations be linked to the number of carriers assigned to a TSP? Kindly justify your response.
And

Q44. In case it is decided to prescribe roll out conditions, what should be the roll-out obligations associated with the assignment of spectrum in E-band and V-band? What provisions should be prescribed for non-fulfilment of the prescribed roll-out obligations? Response may kindly be given for each user category viz. (i) TSPs with Access Service License/ Authorization, (ii) TSPs with other than Access Service License/ Authorization, and (iii) Other entities (non-TSP, for non-commercial/ captive/ isolated use) with detailed justification.

RJIL Response:

1. We submit that in order to promote effective utilization of finite natural resource, there should be roll-out obligations for all access spectrum bands, however, the same should be consistent with the current policy on roll-out obligations wherein compliance with minimum roll out obligations with one technology and spectrum band should suffice for any additional spectrum bands acquired by the TSP. Thus, the roll out obligations should not be applied to TSPs that have already complied with the roll-out of 5G services with mmWave spectrum.

2. For stand-alone operators in the 5G bands of E-Band and V-Band, the roll-out compliance requirement should be same as that of mmWave spectrum.

Q47. Any other suggestions relevant to assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz) may kindly be made with detailed justification.

RJIL Response: None

Q48. In case it is decided for assignment of spectrum on administrative basis, what should be the spectrum charging mechanism for assignment of spectrum for
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers
separately for each of the following three categories: -
a) TSPs with Access Service Authorization
b) TSPs with other than Access Service Authorization
c) Other entities (non-TSP, for non-commercial/ captive/ isolated use)

RJIL Response:

We reiterate our submissions that a decision on auction of this spectrum has already been taken by the Government and there is no reason further discuss the issue.

Nevertheless, we further reiterate that we do not support administrative allocation of these valuable spectrum bands and reiterate that auction is the only legally tenable mode of spectrum assignment in these bands. Further, in compliance with Cabinet Decision there should be no spectrum usage charge applicable on auctioned spectrum.

Q49. Should the auction determined prices of spectrum bands for IMT/5G services be used as the basis for valuation of:
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers Please justify your responses.
And
Q50. Whether the value of spectrum in
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers
be derived by relating it to the value of other bands by using spectral efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your suggestions.

RJIL Response:

E & V band

1. We submit that the auction determined prices (ADP) are a good and relevant factor for the bands that have been already auctioned and sold, all other things remaining unchanged. Further, in case of non-availability of ADP, this value for a band similar in propagation characteristics can be an equally important valuation measure.

2. As the Authority has recently discovered ADP of mmWave band available with it and spectrum in E Band and V Band is similar in nature to mmWave, though with reduced spectral efficiency, therefore, it is submitted that the valuation of spectrum in E-Band and V-Band should be at 50% of ADP for mmWave spectrum.

MWA & MWB

3. The valuation of spectrum in MWA and MWB bands would also require consideration of the fact that backhaul is the only current use case of this spectrum, making it

unidimensional, which would offset the possible advantage of better spectral efficiency. Another consideration would be low utilization of this spectrum.

4. An important consideration in the valuation exercise is the apparent lack of uptake of these backhaul bands despite availability. This is certainly due to high current administrative cost. Thus, in order to ensure optimum utilization of this backhaul spectrum, the valuation would need to be necessarily at levels that make it an attractive buy through auction.

5. Further, considering the current costs of access spectrum, valuation of backhaul spectrum should be considerably lower than lowest ADPs. It is also important to bear in mind that valuation is only one part as the actual market value will be discovered through the auction process only.

6. It is also important to take into consideration that No Spectrum usage charge should be applicable in line with the reforms announced by the Government in 2021 where no SUC is to be charged for spectrum acquired in future auctions.

7. In view of the above and the Authority's data showing marginal utilization of backhaul spectrum, we submit that the valuation of MWA and MWB should be kept at 50% of the valuation of E-Band and V-Band spectrum.

8. It would not be out of place to mention here that the past dues for provisional spectrum assignment in these bands should be calculated on the basis of ADP of this spectrum. The dues for all spectrum assignments may be adjusted against the payments made under prevailing provisional arrangements and then the balance payment should be recovered from the TSP or refund be made, on case-to-case basis.

Q51. Should the current method of levying spectrum fees/charges for E band, MWA carriers and MWB carriers on AGR basis as followed by DoT, serve as a basis for the purpose of valuation of
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers
If yes, please specify in detail what methodology is to be used in this regard.

RJIL Response:

1. The current revenue generated by the Government from these spectrum bands is not a relevant factor as the prices are not market discovered and are exorbitant in nature.

As enumerated in preface, while TSPs require more backhaul spectrum, only 345 out of a total 1699 available MWA (20%) carriers are assigned to existing TSPs, and remaining carriers do not generate any revenue to exchequer. The TSPs are wary of acquiring more carriers on administrative basis due to prohibitively high cost in the form of revenue share and such high costs does not make any business case for acquiring additional spectrum for backhaul.

2. Hence, we believe there is an urgent need to revise the assignment method from administrative to auction based to improve the uptake of more number carriers by the operators. Having greater number of carriers assigned to TSPs at reasonable and market driven prices will facilitate to maximize spectrum utilization and aid in improvement of Quality of Service. Further, in current scenario, most of the spectrum in MWA/MWA/E bands and complete spectrum in V-Band are not assigned, so this value using the AGR basis will be difficult to derive and therefore should be disregarded.

Q52. Should the International administrative annual spectrum charges estimated based on specific channel case (250 MHZ/Year) of E-Band serve as a basis for the purpose of valuation of
i) E band
ii) V bands
Please provide detailed justification. If the answer to the question is yes, should the administrative annual spectrum charges be normalized for cross country differences? Please specify in detail the methodology to be used in this regard?
And
Q53. Should international benchmarking by comparing the auction determined price in countries where auctions have been concluded in E and V bands, if any, be used for arriving at the value of
i) E band
ii) V band
If yes, then what methodology can be followed in this regard? Please provide detailed information.

RJIL Response:

1. International benchmarking is a very important parameter for determining the relative value of spectrum with respect to other IMT bands, especially when the band is being auctioned for the first time and not much data is available for other modes of valuation of spectrum. International benchmarking with either auctioned valuation or administrative charges for a spectrum has been a go to mode of valuation in the past when there was insufficient data on new spectrum bands to be auctioned.

2. However, in this case we have ADP of recently auctioned spectrum in mmWave available with us, there is no requirement of relying on any international administrative charges for determining the valuation of E&V band.

3. Further, a broader consideration should be the role of this spectrum in meeting national proliferation goals. In addition, the cost of laying network should also be juxtaposed against the revenue potential of a spectrum band to arrive at an optimum valuation.

4. It may also be kept in mind that this spectrum will be used majorly to provide high speed data capacities in dense locations, to perform the role of backhaul spectrum wherever required under IAB and is unlikely to be used to provide uniform coverage, therefore the valuation cannot be like any other IMT band except for mmWave.

Q54. Whether any fixed administrative annual spectrum charges/ auction determined prices are available for other jurisdictions in case of MWA and MWB links? If yes, whether these charges/ prices can serve as a basis for the purpose of valuation of
i) MWA
ii) MWB carriers
Please provide with detailed justification.
And
Q55. Should the methodology, as adopted by the Authority in 2014 Recommendations for calculating spectrum charges for MWB links, be used as one of the valuation approach for MWB links? If yes, please provide detailed methodology for arriving at the valuation along with justification.

RJIL Response:

We do not agree with 2014 methodology to be used as one of the valuation techniques. This methodology was based on the primary assumption that the spectrum allocation will be administrative basis only and proposed relatively much higher charges. Further, the lack of availability of carriers in lower frequency bands and to incentivize release of spectrum by incumbent operators in these bands was another consideration.

Q56. Whether the valuation for spectrum in E-band (71-76/ 81-86 GHz) and V-band (57-64 GHz), MWA (13 GHz/ 15 GHz/ 18 GHz/ 21 GHz), MWB (6 GHz/ 7 GHz) be done separately for each LSA, or pan-India basis, or any other geographic area/ link basis? Kindly justify your response.

RJIL Response:

The revenue potential of a spectrum is a major factor in its valuation and as the revenue potential varies from LSA to LSA, the valuation is also done LSA wise. We submit that the current practice of LSA wise valuation should be continued.

Q57. Apart from the approaches highlighted above which other valuation approaches should be adopted for the valuation of
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers
Please support your suggestions with detailed methodology, related assumptions and other relevant factors, etc.

RJIL Response:

We submit that the approaches highlighted by the Authority are sufficient for valuation of spectrum for auction.

Q58. 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.
And
Q59. 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.

RJIL Response:

1. We submit that optimum valuation technique can be a single valuation approach for a particular spectrum band and can be taken as the appropriate value of that band if it gives the optimum result. For instance, in the current exercise, the ADP of mmWave can be single valuation approach for spectrum in E-Band and V-Band as well as MWA, MWB spectrum, based on the propagation characteristics and spectral efficiency. Thus, the focus should be on deriving the optimum valuation benchmark irrespective of the number of techniques used.

2. Average valuation of multiple valuation methodologies can be too simplistic an approach if the valuations are widely disparate and/or one methodology appears to the apt from all aspects and should be avoided in such scenarios.

Q60. Should the reserve price be taken as 70% of the valuation of spectrum? 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 and why? Please support your answer with detailed justification.

RJIL Response:

1. We submit that in reserve price formula of 70% of valuation of spectrum is not optimum for the objective of discovering efficient and optimum price of spectrum. The reserve price should be decided in such a manner that there is greater participation in auction leading to more competitive bidding and thereby discovery of market price. In order to achieve the same, it is important that the reserve price is not kept at artificially high levels that can act as barrier and discourages TSPs from participation in the auction. Therefore, a reserve price at 50% of valuation is recommended.

2. It is pertinent to point out that reduction in reserve price does not necessarily lead to loss to the Exchequer. The auction discovered price will be reflective of current market price of that particular spectrum band and Government will receive license fee from that particular spectrum, which may have remained unsold and unused due to unreasonable reserve price. There will also be the wider benefit from utilization of scarce natural resource. We reiterate that optimum value of spectrum is derived from its usage rather than from the one-time auction revenues.

3. Consequently, we reiterate that the reserve price formula needs to be revisited and the reserve price should be kept at 50% of the valuation of the spectrum.

Q61. In case of auction-based assignment of
i) E band
ii) V band
iii) MWA carriers and
iv) MWB carriers
what should the payment terms and associated conditions relating to:

- **i. Upfront payment**
- **ii. Moratorium period**
- **iii. Total number of installments to recover deferred payments**
- **iv. Rate of interest in respect of deferred payment and prepayment**

Please support your answer with detailed justification.

RJIL Response:

1. We reiterate our submission to the Government and the Authority during the previous consultation exercise for valuation of 5G spectrum that in order to provide initial impetus to the emerging technologies and give sufficient time for laying the networks or additional layers in network and monetize the spectrum, there is a need to considerably relax the payment terms.

2. **We submit that the upfront payment should be kept only at 10% of the bid amount and thereafter minimum 5-year moratorium without any interest cost should be provided.**

3. Further, the deferred payment for auction discovered spectrum price, should be spread over the remaining 15 years by way of annual payments. **These annual payments should be charged with the reasonable interest rates at par with RBI Repo rate.**

4. Further, the TSPs should be permitted pre-payment of deferred payment obligations and should be incentivized by waiving the interest charges on exercising this option.