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To,

Shri. Akhilesh Kumar Trivedi,
Advisor (Networks, Spectrum and Licensing),
TRAI, New Delhi.

No. BSNLCO-RGLN/25/3/2021-REGLN-Part(1)

Dated 15-05-2024

Sub: BSNL comments on TRAI's Consultation Paper on "Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT'-reg.

In reference to the Consultation Paper on "Auction of Frequency Spectrum in 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz bands Identified for IMT", the comments from BSNL are as below:

Q1. Whether the entire available spectrum in each of the frequency ranges (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz, should be put to auction for IMT? If no, please specify the quantum of spectrum in each frequency range to be put to auction. Kindly justify your response.

BSNL Comments:

The entire available spectrum in each of the frequency ranges (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz should be put to auction for IMT as this would take care of any future requirement also in above spectrum. This will play crucial role in enabling the high-speed and low latency feature required by many 5G applications.

The spectrum auction conducted in 2022 in the country had covered all the spectrum range i.e. lower band (Sub -GHz) mid band and mmWave bands. In line with the latest development and maturing of 5G technology, India too set for deployment of 5G services by the TSPs. Thus the major deployments has taken place in 5G in India and particularly rollout in Mid band i.e. 3.3- 3.67 GHz band has been witnessed. India also has seen one of the fastest 5G rollout with thousands of base stations installed every months.

As far as the utilisation of the spectrum acquired by the TSPs in the last auctions held in 2022 is concerned, it is pertinent to note that utilisation of mmWave spectrum is yet to be seen by the industry.

As such, the application of mmWave spectrum is mainly intended for Industry 4.0 applications such as - robotics, industrial automation those are delivered on high bandwidth and low latency. In the last auctions held in 2022, approx. 800 MHz to 1 GHz spectrum has been acquired by the TSPs in mmWave band, however, as per the information available not much usage has been seen by the industry.

Having no usage of mmWave spectrum in India so far has the following possible reasons :-

- a. Lack of adequate device ecosystem or high cost
- b. Non preparedness of the industry to leapfrog to automation
- c. Non availability of radios
- d. High capital cost

mmWave spectrum in general is meant for the specific industrial use cases and usage by the normal 5G subscriber (human) will be minimal. Considering the current status of mmWave spectrum by the industry it is anticipated that utilisation of the spectrum is associated with adoption of the automation by the industry at large. The utilisation of mmWave will accelerate with time as the process of transition and transformation to Industry 4.0 will take place.

Besides the issues with utilisation of mmWave spectrum already acquired by the TSPs in 26 GHz band there are certain other issues also those needs adequate deliberation before finalising the auction roadmap for spectrum proposed. Some of issues as below are as below:-

- a. In the consultation paper, the Authority has also recognised that there is no adequate device ecosystem particularly in n260 band. As such, without adequate device ecosystem there is no point in putting the entire range of spectrum for auctions as it will avail no benefit to the industry as such.
- b. Part of the mmWave spectrum put for auctions in 2022 remains unsold. Whether to put forth the entire proposed spectrum for auctions will be fruitful and add value to the industry?
- c. How the valuation of the spectrum will be arrived for proposed spectrum for action remains unanswered?

Q2. In case you are of the opinion that any of the frequency ranges viz. 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz should be put to auction at a later date, what should be the timelines for auctioning of such frequency bands for IMT? Kindly justify your response.

BSNL Comments:

As the spectrum is meant for IMT and thus speaks about block sizes, TDD etc, we (as VSAT service provider) do not have a say in this. However, the spectrum being auctioned i.e., 37-37.5 GHz, 37.5-40 GHz and 42.5-43.5 GHz is in Ka-band. As the current trend in satellite industry is to move to higher spectrums like Ka-band (because the lower frequency spectrums are already filled up, higher bandwidths and smaller antenna sizes are possible at higher frequency spectrums etc), the satellite service providers like ISRO/NSIL may have reservations/comments on this.

BSNL as such is of the opinion that ecosystem in mmWave band requires more time to get matured. Therefore, it is suggested that the spectrum proposed for auction as per the consultation paper should be put on hold for the next 2-3 years. By the time there will be clarity and better ecosystem will be available. However, in case the Authority decides to put the proposed spectrum for auctions, then it is suggested that only the range 37-37.5 GHz, 37.5-40 GHz with adequate protection for satellite services should be considered for the auction in the next round. The spectrum band 42.5-43.5 GHz may be considered later after a gap of 3-4 years from now.

Q3. Do you agree that TDD-based duplexing configuration should be adopted in the country for the frequency ranges under consideration viz. (a) 37 - 37.5 GHz, (b) 37.5 -

40 GHz, and (c) 42.5 - 43.5 GHz, for IMT? If yes, considering that there is an overlap of frequencies in the band plans n260 (37-40 GHz) and n259 (39.5-43.5 GHz), how should the band plan(s) along with its frequency range be adopted? Kindly justify your response.

BSNL Comments:

Yes, TDD-based duplexing configuration should be adopted in the country for the above frequency ranges for IMT. The above mmWave frequencies are expected to be deployed where high demand of data services is required, therefore as TDD offers very high-capacity and lower latency, this type of configuration is optimal. As **n 259 (39.5-43.5 GHz)** covers frequencies (40-42.5 GHz) which are being used by satellite gateway and users, therefore, it is suggested that n260 band may be used for IMT and from n259 only frequency range from 42.5-43.5 GHz may be used for IMT.

Q4. Whether the spectrum in the frequency ranges under consideration viz. (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz should be assigned for a validity period of 20 years, as prevalent in the existing frequency bands, or for a shorter validity period? In case you are of the opinion that a shorter validity period should be adopted, please suggest the validity period? Kindly provide your response with detailed justifications.

BSNL Comments:

No, the spectrum in the above frequency ranges under consideration should not be assigned for a validity period of 20 years, as prevalent in the existing frequency bands, but for a shorter validity period.

As the above frequency bands, being identified for IMT are being considered for auction for the first time in India and particularly for these higher spectrum bands ecosystem is not fully developed and such frequency bands are yet to find adequate use cases, therefore assessing the true value of spectrum and their use-cases in such frequency bands is not clear.

mmWave spectrum is yet to witness the utilisation. With the more and more use cases and adoption by the industry, the utilisation may rise to an optimum level. At this stage it cannot be ensured that the by what time the ecosystem will be adequately developed. In the changing technological scenarios and with the niche usage of mmWave spectrum the validity period of 10 or 15 years should suffice. The Authority in the CP has also mentioned various international scenarios wherein in the countries such as – Canada, USA and UK the validity of the spectrum assignment has been kept for 10 or 15 years.

Considering the submissions above, it will be prudent that spectrum validity should be kept for 10 years or maximum 15 years only with provision to further renewal of 5 years. The valuation of the spectrum can be rationalised accordingly for allocation of 10 or 15 years.

Q5. Whether the spectrum in (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz frequency ranges should be assigned for the existing licensed service areas (LSAs) for Access Service (i.e. Telecom Circles/ Metros), or it should be assigned for smaller service areas? In case you are of the opinion that the spectrum in these bands should be assigned for smaller service areas, please suggest the criteria for defining such service areas? Kindly provide your response with detailed justifications.

BSNL Comments:

The spectrum proposed in Consultation Paper has the scope of use cases pertaining to the high throughput and low latency scenarios only. The Authority in the Consultation Paper has also mentioned that coverage of mm Wave is not envisaged to be ubiquitous. The requirement of the mmWave spectrum will be in the industrial zones, mines or specialised industrial units such as - SEZs. This implies that assignment of the proposed spectrum will not be viable at the LSA level.

It will be appropriate that spectrum in mmWave should be assigned at Secondary Switching Areas/ SDCA or District level so as the effective utilisation of the spectrum is achieved. Once the TSP is able to get the spectrum assignment at Secondary Switching Areas/ SDCA or District level, the adoption and utilisation will increase as the assignment will be required on business case basis. The analogy of smaller license area can be drawn from the UL (VNO) Cat B license and a similar authorisation for mmWave spectrum can be adopted for assignment.

The valuation of the spectrum should be rationalised and factored to - SGDP, area of operation, no. of Districts in addition to the technical and other criteria and methodology so as the assignment at Secondary Switching Areas/ SDCA or District level can be enabled.

In addition to the above, it is also suggested that policy decision should be enacted to enhance the usage of assignment of the mmWave (26 GHz) spectrum auctioned in 2022 auctions should also be allowed at Secondary Switching Areas/ SDCA or District level. By doing so the TSP will be able to execute the various business proposals in pipeline and the industry at large will be benefitted.

Q6. What should be the block size, and the minimum quantity for bidding in (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz frequency ranges? Kindly justify your response.

BSNL Comments:

Considering the adoption in develop countries and expected use cases such as provision of 5G use cases/ applications requiring high data rates and low latency with larger chunk of spectrum a 100 Mhz block size should be the optimal. The minimum quantity for bidding in above frequency ranges should be one block.

Minimum block size of the spectrum can be kept as 100 MHz. This will provide flexibility on part of licensor and licensee both.

As per the decisions of the government, BSNL is not participating to the spectrum actions. As per the decisions of the Union Cabinet in the past, a certain part of spectrum has been reserved for BSNL to deploy the indigenous technology. In the current scenario also it is requested that 25% of the spectrum to be put for auctions should be reserved for BSNL so as BSNL is able to meet the objectives as set by the Gol, from time to time.

Q7. What provisions with respect to the spectrum cap per service provider in a licensed service area (LSA) should be made applicable for the frequency ranges under consideration viz. (i) 37-37.5 GHz, (ii) 37.5-40 GHz, and (iii) 42.5-43.5 GHz for IMT?

Specifically, -

- a. Whether there is a case for a combined spectrum cap for 26 GHz band (24.25-27.5 GHz) and the frequency ranges under consideration? If yes, what should be the spectrum cap? Kindly justify your response.
- b. In case your response to (a) above is in the negative, whether spectrum cap should be prescribed separately for each frequency range viz. (i) 37-37.5 GHz, (ii) 37.5-40 GHz, and (iii) 42.5-43.5 GHz, or these frequency ranges should be combined for applicability of spectrum cap? What should be the spectrum cap(s)? Kindly justify your response.

BSNL Comments:

(a) No, there should not be a combined spectrum cap for above frequency ranges under consideration and spectrum cap should be separately for each of the above frequency ranges, because in combined spectrum cap, there could be a possibility of a service provider monopolizing one of the spectrum bands, particularly in the case of new spectrum bands. Band-wise capping will ensure healthy competition and fair allocation of the natural resource.

(b) Spectrum Cap of 40% on the spectrum holding as above should be prescribed for each frequency range to ensure fair allocation of natural resource, reason as above.

Q8. What should be the roll-out obligations for the assignment of spectrum in (a) 37-37.5 GHz, (b) 37.5-40 GHz, and (c) 42.5-43.5 GHz frequency bands for IMT? Kindly justify your response.

BSNL Comments:

Deployment of above spectrum for IMT is not likely to be universal as these high frequency waves do not travel longer due to higher propagation losses and are not suitable for extending mobile coverage to uncovered/ remote areas but in particular areas based on the throughput requirement and business potential, therefore, no rollout obligations should be casted on the TSPs for these bands. TSPs should be allowed to decide the viability of these bands rather than enforcing coverage objectives. However, nominal network deployment-based rollout obligations may be advised to ensure that the spectrum purchased is put to an efficient use, in a timely manner.

Q 9 . Whether the eligibility conditions and associated eligibility conditions for participation in the auction for 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz should be kept analogous to the eligibility conditions and associated eligibility conditions for participation in the auction for spectrum for IMT, as defined in NIA 2024? In case your response is in the negative, suggestions may kindly be made with detailed justification.

BSNL Comments:

Yes, the eligibility conditions and associated eligibility conditions for participation in the auction for above frequencies should be kept analogous to the eligibility conditions and associated eligibility conditions for participation in the auction for spectrum for IMT, as defined in NIA 2024

Q10. To mitigate inter-operator interference due to TDD-based configuration, whether the approach adopted for 3300-3670 MHz and 26 GHz bands should also be made applicable for the frequency ranges under consideration viz. 37-37.5 GHz, 37.5-40 GHz, and 42.5-43.5 GHz, or some other provisions need to be created? In case you are of the opinion that some other provisions are required to be created, suggestions may be made with detailed justification.

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BSNL Comments:

Yes, same approach adopted for 3300-3670 MHz and 26 GHz bands to mitigate inter-operator interference due to TDD-based configuration, should also be made applicable for the frequency ranges under consideration.

This is for your kind consideration please.

Yours faithfully



(Ved Prakash Verma)
DGM (Regulation-II)