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4th January 2022

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Chairman,
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Sub: Submission towards inputs invited on the Consultation Paper on 'Auction of Spectrum in frequency bands identified for IMT/5G'.

Respected Sir,

In the response to the inputs invited from various stakeholders on the Consultation Paper regarding **Auction of Spectrum in frequency bands identified for IMT/5G**, as issued by TRAI on 30th November 2021, please find enclosed our submission for your kind perusal and consideration.

We are hopeful that the relevance of the vital inputs shared by us shall be deliberated upon in detail, in the process of culminating a recommendation regarding this critical issue for the industry.

With regards,

Yours sincerely,

Bharat Gupta,
Head - Corporate Affairs,
Sterlite Technologies Limited.

STL Response to TRAI Consultation Paper
“Auction of Spectrum in frequency bands identified for IMT/5G”

Issues related to Quantum of Spectrum and Band Plan

Q.1 Whether spectrum bands in the frequency range 526-617 MHz, should be put to auction in the forthcoming auction? Kindly justify your response.

A.1 Any band should be taken up for auction only after considerable device eco-system is available. Not only the device eco-system, but due to non-availability of frequency arrangement from 3GPP, there is no radio & UE equipment supporting this band. Thus, it is not advisable to put this band for auction.

Q.2 If your answer to Q1 above is in affirmative, which band plans and duplexing configuration should be adopted in India? Kindly justify your response.

A.2 Not advisable to put 526-617 MHz band for auction

Q.3 In case your answer to Q1 is in negative, what should be the timelines for adoption of these bands for IMT? Suggestions to make these bands ready for adoption for IMT may also be made along with proper justification.

A.3 For a harmonized utilization of this frequency band, there should be discussion and decision on the frequency arrangement in the ITU/APT. Accordingly, equipment and device manufacturers can be encouraged to develop the products supporting this frequency band. Once the considerable number of devices and network equipment are available, this band can be put to auction.

Q.4 Do you agree that 600 MHz spectrum band should be put to auction in the forthcoming auction? If yes, which band plan and duplexing configuration should be adopted in India? Kindly justify your response.

A.4 Since the amount of unsold spectrum in 700, 800, 900MHz frequency bands in Mar 2021 spectrum auction is significant enough to deliver on the coverage and capacity requirements, before moving directly to spectrum auction of 600MHz band, it is better to estimate the interest of industry stakeholders. To access the same, DoT should plan to provide this spectrum for trial/study purpose to the telcos and industry players. This way clear understanding of device/equipment eco-system and spectrum requirement can be made.

Q.5 For 3300-3670 MHz frequency range, which band plan should be adopted in India? Kindly justify your response.

A.5 Considering the spectrum allocations and deployments across the world, 3GPP n78 band plan is the most suitable band plan for 3300~3670MHz.

In case, an additional spectrum is earmarked for IMT/5G in India in future, it may be taken up in band plan of n77 or n78.

Q.6 Do you agree that TDD based configuration should be adopted for 24.25 to 28.5 GHz frequency range? Kindly justify your response

A.6 Yes, as per 3GPP band plan, TDD is the suitable duplex mode for 24.25 to 28.5GHz frequency range. Also, in all the commercial deployments of mmWave frequency bands n258 and n257, TDD based configuration has been selected.

Q.7 In case your response to Q6 is in affirmative, considering that there is an overlap of frequencies in the band plans n257 and n258, how should the band plan(s) along with its frequency range be adopted? Kindly justify your response.

A.7 Band plan should be adopted as it has been defined in 3GPP. More than one hundred announced end-user devices support one or more 5G spectrum bands above 24GHz.

Q.8 Whether entire available spectrum referred by DoT in each band should be put to auction in the forthcoming auction? Kindly justify your response.

A.8 This is highly commendable step of the DoT and Government of India to consider such a large amount of spectrum for IMT/5G services in India. It has been a long-standing demand of the industry stakeholders to get adequate amount of spectrum for 5G. It is welcoming that output of WRC19 has been adopted and new frequency bands are being introduced for IMT services. However, as responded above in A4, an assessment of the interest of industry stakeholders in the new frequency bands such as 600MHz should be made. Apart from 600MHz, all available spectrum in other frequency bands such as 3300 to 3670MHz and 24.25 to 28.5GHz should be put for auction.

Issues related to Block Size

Q.9 Since upon closure of commercial CDMA services in the country, 800 MHz band is being used for provision of LTE services,

(a) Whether provision for guard band in 800 MHz band needs to be revisited?

A.9 (a) Since no TSP in India is using 800MHz for CDMA services now and in LTE, there's no need to continue with the guard band, the original requirement of having a 200KHz guard band could forgo.

(b) Whether there is a need to change the block size for 800 MHz band? If yes, what should be the block size for 800 MHz band and the minimum number of blocks for bidding for existing and new entrants? (Kindly justify your response)

A.9 (b) There is no need to change the block size. The average amount of spectrum available for auction is less than 5MHz and keeping the block size more than 1.25MHz will lead to un-used/un-sold spectrum. Thus, there's no need to change the block size and minimum quantity for bidding for new entrants.

Q.10 Do you agree that in the upcoming auction, block sizes and minimum quantity for bidding in 700 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands, be kept same as in the last auction? If not, what should be the band-wise block sizes and minimum quantity for bidding? Kindly justify your response.

A.10 There's no need to change the block size and minimum quantity for bidding. Existing conditions can be retained.

Q.11 In case it is decided to put to auction spectrum in 526-698 MHz bands, what should be the optimal block size and minimum quantity for bidding? Kindly justify your response.

A.11 Please refer to **A.4**

Q.12 What should be optimal block size and minimum quantity for bidding in 3300-3670 MHz band? Kindly justify your response.

A.12 Since the minimum channel bandwidth supported by NR in FR1 is 10MHz, the most optimum block size could be 10MHz, while to deliver a substantially better user experience than 4G LTE, the minimum quantity for bidding should be kept as 50MHz.

Q.13 What should be optimal block size and minimum quantity for bidding in 24.25-28.5 GHz? Kindly justify your response.

A.13 Since the minimum channel bandwidth supported by NR in FR2 is 50MHz, the most optimum block size could be 50MHz. mmWave band would be used for multi-Gbps broadband use-cases and therefore, the minimum quantity for bidding should be 400MHz.

Issues related to Eligibility Conditions for Participation in Auction

Q.14 Whether any change is required to be made in the existing eligibility conditions for participation in Auction as specified in the NIA for the spectrum Auction held in March 2021, for the forthcoming auction? If yes, suggestions may be made in detail with justification.

A.14 No Comments

Q.15 In your opinion, should the suggested/existing eligibility conditions for participation in Auction, be made applicable for the new spectrum bands proposed to be auctioned? If not, what should be the eligibility conditions for participating in Auction? Kindly justify your response. Issues related to Interference mitigation in TDD bands

A.15 No Comments

Q.16 Is there a need to prescribe any measure to mitigate possible interference issues in 3300-3670 MHz and 24.25-28.5 GHz TDD bands or it should be left to the TSPs to manage the interference by mutual coordination and provisioning of guard bands? Kindly provide justification to your response.

A.16 Since TDD operation can get affected by inter-symbol or inter-system interference issues, there should a mechanism to manage the interference by mutual coordination between different TSPs or by making guard bands available. In India, TDD based LTE network is already operational in 2300MHz band. To mitigate the interference issues, TSPs follow specific TDD frame structure and coordinate in case issue arises.

Similar approach can be followed for new TDD bands which will be used for 5G networks in near future.

Q.17 In case your response to the above question is in affirmative,

(a) whether there is a need to prescribe provisions such as clock synchronization and frame structure to mitigate interference issues, as prescribed for existing TDD bands, for entire frequency holding or adjacent frequencies of different TSPs? If yes, what should be the frame structure? Kindly justify your response.

(b) Any other measures to mitigate interference related issues may be made along with detailed justification.

A.17 TSPs need to be allocated same frequency spots across the LSAs. Interference issues can be resolved after mutual coordination.

Issues related to Roll-out Obligations

Q.18 Whether the roll-out obligations for 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz as stipulated in the NIA for last auctions held in March 2021 are appropriate? If no, what changes should be made in the roll out obligations for these bands?

A.18 Roll-out obligations provided in the NIA for the auction in March 2021 are appropriate and no changes are required.

Q.19 What should be associated roll-out obligations for the allocation of spectrum in 526-698 MHz frequency bands? Should it be focused to enhance rural coverage? Kindly justify your response.

A.19 Prime objective of any of the <1GHz frequency band is to provide a ubiquitous coverage. Both frequency bands 526-698MHz and 700MHz are meant to be used for 5G services and would be used by TSPs only when it is commercially viable. Thus, there need not be a separate roll-out obligation for both frequency bands.

Q.20 What should be associated roll-out obligations for the allocation of spectrum in 3300-3670 MHz frequency band? Kindly justify your response.

A.20 In the recommendations dated 1st Aug 2018, TRAI had not proposed any roll-out obligations for 3300-3600MHz. One of the reasons behind this recommendation was that 5G roll-out in the concerned band was just started and the device eco-system was not matured. Thus, in the absence of mature eco-system, TSP would have required more time to efficiently

implement the 5G network. Therefore, it was apt to not to mandate any roll-out obligation. However, there has been multiple 5G deployments across globe in this band. As per GSA, there are around 800 devices supporting n78 band, which indicates that device/network ecosystem has matured. Therefore, it is required to mandate the roll-out obligations so that the country doesn't get deprived of the latest technologies and 5G service is made available across country in an appropriate time. Technically, the radio wave propagation characteristics of 2300/2500MHz and 3500MHz are not much different and will provide almost similar coverage. Therefore, it may be considered to follow the same roll-out regulations as defined for 2300/2500MHz.

Q.21 What should be associated roll-out conditions for the allocation of spectrum in 24.25 to 28.5 GHz frequency range? Kindly justify your response.

A.21 Since the spectrum in 24.25 to 28.5GHz offers high capacity within a small geography, its use will be limited to specific hotspots that require high data rates. Therefore, rather than recommending the roll-out obligations based on population coverage, guidelines should be given in terms of number of hotspots covered in an LSA.

Q.22 While assessing fulfilment of roll out obligations of a network operator, should the network elements (such BTS, BSC etc.), created by the attached VNO, be included? If yes, kindly suggest the detailed mechanism for the same. Kindly justify your response.

A.22 No comments

Issues related to Spectrum Cap

Q.23 Whether there is a need to review the spectrum cap for sub-1 GHz bands? If yes, what should be the spectrum cap for sub-1 GHz bands. Kindly justify your response.

A.23 Existing spectrum cap of 50% on combined spectrum in <1GHz band is irrelevant due to the inclusion of new bands. Since the total available spectrum in low bands has gone up, it is better to use the same approach as of mid-band spectrum. Therefore, an overall spectrum cap on all the available frequency bands in an LSA would be more appropriate. However, the amount or percentage of the overall spectrum cap can be decided so that spectrum can be maximally utilized as well as market competition is fostered.

Q.24 Keeping in mind the importance of 3300-3670 MHz and 24.25- 28.5 GHz bands for 5G, whether spectrum cap per operator specific to each of these bands should be prescribed? If yes, what should be the cap? Kindly justify your response.

A.24 Spectrum cap per operator in both frequency bands (3300-3670MHz and 24.25-28.5GHz) is highly required. It will give chance to new players to enter the market and prevent monopolization. Considering the spectrum allocations in other markets, spectrum cap per operator in 3300-3670MHz should be 150MHz and in 24.25-28.5GHz should be 1000MHz.

Q.25 Whether there should be separate spectrum cap for group of bands comprising of 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands together? If yes, kindly suggest the cap along with detailed justification.

A.25 Overall spectrum cap should be applicable till 2500MHz band. Since higher mid-bands and mmWave bands have greater channel bandwidth, spectrum cap per operator should be used in 3300-3670MHz and 24.25-28.5GHz.

Q.26 Whether overall spectrum cap of 35% requires any change to be made? If yes, kindly suggest the changes along with detailed justification.

A.26 As responded in A.25; overall spectrum cap should be applicable to bands below 2500MHz.

Q.27 For computation of overall spectrum cap of 35%, should the spectrum in 3300-3670 MHz and 24.25-28.5 GHz bands be included? Kindly justify your response.

A.27 As per responses in **A.25** and **A.26**

Q.28 Any other suggestion regarding spectrum cap may also be made with detailed justification.

A.28 No Comments

Issues related to Surrender of Spectrum

Q.29 What should be the process and associated terms and conditions for permitting surrender of spectrum for future auctions? Kindly justify your response.

A.29 No comments

Q.30 What provisions may be created in the spectrum surrender framework so that any possible misuse by the licensees, could be avoided? Kindly justify your response.

A.30 No comments

Q.31 In case a TSP acquires spectrum through trading, should the period of 10 years to become eligible for surrender of spectrum, be counted from the date of original assignment of spectrum or from the date of acquisition through spectrum trading? Kindly justify your response.

A.31 No comments

Q.32 Whether provision for surrender of spectrum should also be made available for the existing spectrum holding of the TSPs? If yes, what should be the process and associated terms and conditions? Kindly justify your response.

A.32 No comments

Q.33 Whether spectrum surrender fee be charged from TSPs? If yes, what amount be levied as surrender fee? Kindly justify your response.

A.33 No comments

Issues related to Valuation and Reserve price of Spectrum

Q.34 Which factors are relevant in the spectrum valuation exercise and in what manner should these factors be reflected in the valuation of spectrum? Please give your inputs with detailed reasoning.

A.34 No comments

Q.35 In what manner, should the extended tenure of spectrum allotment from the existing 20 years to 30 years be accounted for in the spectrum valuation exercise? Please support your response with detailed rationale/ inputs.

A.35 No comments

Q.36 What could be the likely impact of the following auction related telecom reforms announced by the Government in September 2021 on the valuation of various spectrum bands?

(a) Rationalization of Bank Guarantees to securitize deferred annual spectrum payment instalments in future auctions

(b) No spectrum usage charges (SUC) for spectrum acquired in future auctions

(c) Removal of additional SUC of 0.5% for spectrum sharing

(d) Provision for surrender of spectrum In what manner, should the above provisions be accounted for in the valuation of spectrum? Please support your response with detailed justification.

A.36 No comments

Q.37 Whether the auction determined prices of March 2021 auction be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? Should the prices be indexed for the time gap (even if less than one year or just short of one year)? If yes, please indicate the basis/ rate at which the indexation should be done, with reasons.

A.37 No comments

Q.38 If the answer to the above question is in negative, whether the valuation for respective spectrum bands be estimated on the basis of the various valuation approaches/methodologies being followed by the Authority in the previous recommendations, including for those bands (in an LSA) for which either no bids were received, or spectrum was not offered for auction?

A.38 No comments

Q.39 Whether the method followed by the Authority in the Recommendations dated 01.08.2018 of considering auction determined prices of the auctions held in the previous two years be continued, or the prices revealed in spectrum auctions conducted earlier than two years may also be taken into account? Kindly justify your response.

A.39 No comments

Q.40 Whether the valuation exercise be done every year in view of the Government's intention to have an annual calendar for auction of spectrum? Please support your response with detailed justification.

A.40 No comments

Q.41 Whether there is a need to bring any change in the valuation approaches/ methodologies followed by the Authority for spectrum valuation exercises in view of the changing dynamics in the telecom sector largely due to the usage of various spectrum bands by the TSPs in a technologically neutral manner? If yes, please provide suggestions along with a detailed justification about the methodology.

A.41 No comments

Q.42 In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 2500 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)? Please support your response with detailed justification.

A.42 Lack of interest in 2500MHz is largely attributed to market conditions as well as substitute spectrum availability. There is no issue of network/device eco-system. As TSPs have made their choice for frequency band to be used for 4G, their spectrum addition strategy is mostly dependent on the equipment available in their existing network. For optimizing the CAPEX, telcos prefer to augment the capacity by addition of existing spectrum carrier, rather than going for an entirely new spectrum band.

Q.43 Whether the March 2021 auction determined prices be used as one possible valuation for the spectrum in 2300 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify your response.

A.43 No comments

Q.44 Whether auction determined prices of October 2016 (i.e. for the auction held earlier than two years) be used as one possible valuation for the spectrum in 2500 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify.

A.44 No comments

Q.45 Whether the value of the spectrum in 2300 MHz/ 2500 MHz bands should be derived by relating it to the value of spectrum in any other band by using technical efficiency factor? If yes, which band and what rate of efficiency factor should be used? If no, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting studies, if any.

A.45 No comments

Q.46 In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 700 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)?

A.46 No comments

Q.47 Whether the value of spectrum in 700 MHz band be derived by relating it to the value of other spectrum bands by using a technical 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 views with rationale and supporting studies, if any.

A.47 No comments

Q.48 If your response to the above question is in negative, what other valuation approach(es) be adopted for the valuation of 700 MHz spectrum band? Please support your response with detailed methodology.

A.48 No comments

Q.49 Whether the valuation of the 3300-3670 MHz spectrum band should be derived from value of any other spectrum band by using technical efficiency factor? If yes, what rate of efficiency factor should be used? If no, which other method(s) should be used for its valuation? Please justify your response with rationale and supporting documents, if any.

A.49 No comments

Q.50 In case you are of the opinion that frequencies in the range 526-698 MHz should be put to auction in the forthcoming spectrum auction, whether the value of 526-698 MHz be derived by using technical 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.

A.50 No comments

Q.51 If your response to the above question is in negative, which other valuation approach(es) should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and any other relevant factors.

A.51 No comments

Q.52 Whether the value of spectrum in 24.25 - 28.5 GHz band be derived by relating it to the value of other bands by using technical 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.

A.52 No comments

Q.53 If your response to the above question is in negative, which other valuation approaches should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and other relevant factors.

A.53 No comments

Q.54 Whether international benchmarking by comparing the auction determined price in countries where auctions have been concluded be used for arriving at the value of these new bands? If yes, then what methodology can be followed in this regard? Please explain.

A.54 No comments

Q.55 For international benchmarking, whether normalization techniques be used for arriving at the valuation of these new bands in the Indian context? If yes, please justify your response with rationale /literature, if any.

A.55 No comments

Q.56 Whether a common methodology/ approach should be used for valuation of all sub-1 GHz bands, which are currently planned for IMT? If yes, suggest which methodology/ approach should be used. Please give your views along with supporting reasoning and documents/ literature, if any.

A.56 No comments

Q.57 Whether the extrapolated ADP based on a time-series analysis, may be considered as the valuation itself or some normalization may be performed taking into account the financial, economic and other parameters pertaining to a particular auction? If yes, which factors should be considered and what methodology should be followed?

A.57 No comments

Q.58 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 justify your response.

A.58 No comments

Q.59 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 justify your response

A.59 No comments

Q.60 Is there any valuation approach other than those discussed above or any international auction experience/ approach that could be used for arriving at the valuation of spectrum for 700 MHz/ 800 MHz/ 900 MHz/ 1800 MHz/ 2100 MHz/ 2300 MHz/ 2500 MHz/3300-3670 MHz/ 24.25 - 28.5 GHz/ 526 - 698 MHz bands? Please support your suggestions with a detailed methodology and related assumptions.

A.60 No comments

Q.61 Should the reserve price be taken as 80% 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?

A.61 No comments

Q.62 Whether the realized/ auction determined prices achieved in the March 2021 auction for various spectrum bands can be directly adopted as the reserve price in respective spectrum bands for the forthcoming auction? If yes, should these prices be indexed for the time gap since the auction held in March 2021 and at which rate the indexation should be done?

A.62 No comments

Q.63 Should the method followed by DoT in the previous auction in respect of collecting bid amount from the successful bidder in case spectrum is not available in a part of the LSA be followed in the forthcoming auction? Please justify your response in detail.

A.63 No comments

Q.64 What percentage rate of upfront payment should be fixed in case of each spectrum band?

A.64 No comments

Q.65 What should be the applicable period of moratorium for deferred payment option?

A.65 No comments

Q.66 How many instalments should be fixed to recover the deferred payment?

A.66 No comments

Q.67 What rate of discount should be used while exercising prepayment/deferred payment option, in order to ensure that the net present value of payment/ bid amount is protected? (Please support your suggestions for Q64 to Q67 with proper justifications.)

A.67 No comments

Issues related to Spectrum for Private Cellular Networks

Q.68 To facilitate the TSPs to meet the demand for Private Cellular Networks, whether any change(s) in the licensing/policy framework, are required to be made. If yes, what changes are required to be made? Kindly justify your response.

A.68 In order to facilitate quick availability of technology and open the diverse eco-system for Indian device/equipment design and manufacturing companies, Private cellular networks should be kept out of TSP's ambit. As mentioned in the consultation paper, providing the authority only to TSPs can create several hinderances and enterprises will not be able to reap the true benefit. Light licensing for localized or local use should be authorized/permitted directly by the licensor (DoT/WPC). Private cellular network licensing frameworks being adopted by countries such as Germany, UK, France, Sweden, Australia, South Korea, Malaysia etc. will complement the developing ecosystem and will fulfil the growing requirement from enterprises to have their own network.

Q.69 To meet the demand for spectrum in globally harmonized IMT bands for private captive networks, whether the TSPs should be permitted to give access spectrum on lease to an enterprise (for localized captive use), for a specific duration and geographic

location? Kindly justify your response.

A.69 As responded in **A.68**; enterprises should be allocated earmarked spectrum for their localized captive use separately and light licensing should be followed. As stated in the consultation paper, the GAA license for CBRS band has been the enabler for widest possible group of users for free and shared use of spectrum for their private network usage. Similar to US, India may adopt the shared spectrum model and designate/earmark spectrum for private cellular network of enterprises.

Q.70 In case spectrum leasing is permitted,

- i. Whether the enterprise be permitted to take spectrum on lease from more than one TSPs?
- ii. What mechanism may be prescribed to keep the Government informed about such spectrum leasing i.e., prior approval or prior intimation?
- iii. What timeline should be prescribed (in number of days) before the tentative date of leasing for submitting a joint request by the TSPs along with the enterprise, for approval/intimation from/to the Government?
- iv. Whether the spectrum leasing guidelines should prescribe duration of lease, charges for leasing, adherence of spectrum cap provisions, roll out obligations, compliance obligations. If yes, what terms and conditions should be prescribed?
- v. What other associated terms and conditions may be prescribed?
- vi. Any other suggestion relevant to leasing of spectrum may also be made in detail. (Kindly justify your response)

A.70 As responded in A.68; enterprises should be allocated earmarked spectrum for their localized captive use separately and light licensing should be followed.

Q.71 Whether some spectrum should be earmarked for localized private captive networks in India? Kindly justify your response

A.71 So far, the privilege of having the private network was only with government agencies. Following the global scenarios, Indian industry is quite poised to enter into this new era of building their private network and managing it as per their choices. Thus, Government need to back them by designating an IMT spectrum so that benefits of economies of scale can be availed. Since this spectrum will be allocated only for localized captive use, it will be requiring a coordinated access (ensuring non-interference to others).

Q.72 In case it is decided to earmark some spectrum for localized private captive networks, whether some quantum of spectrum be earmarked (dedicatedly) from the spectrum frequencies earmarked for IMT services and/or spectrum frequencies earmarked for non-IMT services on location-specific basis (which can coexist with cellular-based private captive networks on shared basis)? Kindly justify your response with reasons.

A.72 For scalable ecosystem, wider deployment and export possibilities for Indian companies, India should adopt IMT bands and earmark specific band/s for Private cellular networks.

Q.73 In case it is decided to earmark some quantum of spectrum for private captive networks, either on exclusive or shared basis, then

(a) Spectrum under which band(s) (or frequency range) and quantum of spectrum be earmarked for Private Network in each band? Inputs may be provided considering both dedicated and shared spectrum (between geographically distinct users) scenarios.

A.73 (a) Dedicated spectrum for private cellular networks should be earmarked in n77/n78/n79 band. If we take example of CBRS (US), 80MHz of spectrum in the chunks of 20MHz is suitable for most private networks.

(b) What should be the eligibility conditions for assignment of such spectrum to private entities?

A.73 (b) To promote the private cellular network concept in India, there shouldn't be any stringent conditions w.r.t economical condition, geographical position, scale in terms of human resources etc. It is evident from the available report of GSA that it is not just IT industry which is interested in private cellular networks, but academia, port, oil & gas, agriculture, police, smart city etc. are looking forward to this new regime and therefore, the eligibility conditions for seeking and granting the spectrum for private networks should not be stringent and the entire application/approval process should be single-window based.

(c) What should be the assignment methodology, tenure of assignment and its renewal, roll-out obligations?

A.73 (c) Spectrum should be assigned based upon light licensing and quick/auto approval basis. Statutory audits on the legitimate private use can be done periodically.

(d) What should be the pricing mechanism for assignment of spectrum in the band(s) suggested for private entities for localized captive use and what factors should be considered for arriving at valuation of such spectrum?

A.73 (d) Pricing should be decided on the basis of demand. For introductory testing/trial, spectrum should be allocated at low prices for a particular period. Once the trial period is over, spectrum pricing can be decided on the basis of quantum and duration the spectrum is required for.

(e) What should be the block size and spectrum cap for different spectrum band(s) suggested in response to point (a) above.

A.73 (e) Block size of 10MHz with maximum 4 blocks per applicant can be allocated to Private Cellular Network.

(f) What should be the broad framework for the process of:

(i) filing application(s) by enterprise at single location, enterprise at multiple locations, Group of companies.

(ii) payment of spectrum charges,

(iii) assignment of frequencies,

(iv) monitoring of spectrum utilization,

(v) timeline for approvals,

(vi) Any other

(g) Any other suggestion on the related issues may also be made with details. (Kindly justify your response with reasons)

A.73 (f) (g) No Comments

Q.74 What steps need to be taken to facilitate identification, development and proliferation of India specific 5G use cases for different verticals for the benefit of the economy and citizens of the Country? Kindly provide detailed response with rationale.

A.74 No Comments
