From: **"Sharma Praveen (VP)"** <praveensharma@tatacommunications.com>
Date: Nov 6, 2017 10:52:22 PM

Subject: TCL Response to CP on auction of Spectrum

Dear Sir,

Kindly find attached herewith TCL response to CP on auction of Spectrum for your kind consideration and for taking on record. We apologize for the delay as we should Have sent the same during working hours today.

Kind regards

Praveen Sharma

Authorized Signatory

TCL

TCL Response to CP on Auction of Spectrum

Q.1 (a) In your opinion when should the next access spectrum auction be held?

Without prejudice to the issues presented in the consultation paper under discussion, Tata Communications Ltd. (TATA COMMUNICATIONS) holds the view that spectrum auction should not be held for 3300-3400 MHz spectrum band. The aforementioned band should continue to be made available administratively, on a link-by-link basis. This is also in line with the earlier TRAI recommendation on "Allocation and pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers", released on 29/08/2014.

At the same time, if spectrum was indeed to be auctioned, the next round should be held towards the end of calendar year 2020 due to the following reasons.Currently, the telecom sector is under severe financial stress. Entry of a new telecom operator last year has resulted into intense competition, thus impacting both top line and bottom line of all the major telecom players. Due to hyper competition, concerns are being expressed about the capability of the companies to meet their contractual financial commitments. DoT has indicated that about Rs 3.08 lakh crore is due over the next 11 years on account of deferred payment plans opted by TSPs for the purchase of spectrum rights in the recent auctions.If press reports are to be believed, the telecom industry also owes about Rs 5 lakh crore to various financial institutions and banks.All the preceding things are indicative of precarious financial health of all the telecom players.

Secondly, the Telecom industry is presently undergoing a phase of consolidation and some of the Telecom Services Providers (TSPs) have filed for merger of their companies/licenses, while a few licensees have traded their entire spectrum holding and closed their services. Consequently, all major telcos have/will have enough spectrum with them in order to take care of immediate spectrum requirements if any.

Thirdly, in the last auction held in October 2016, around 60% of the spectrum remained unsold and the spectrum acquired in the said auction is yet to be deployed fully by the telcos.This indicates that there is no necessity of additional spectrum at this juncture.

Against the 4G spectrum acquired in the June 2010 and October 2016 auctions, TSPs began rolling-out their networks since 2016 only and have been continuing still. In short, they have yet to roll-out their full network, acquire a critical customer mass and generate enough network traffic. At this juncture, they have enough network capacity to enable them to sustain for the next 2-3 years period. Consequently, there is no need for additional spectrum in the immediate future.

In consideration of the above, TATA COMMUNICATIONS is of the view that right time to auction additional spectrum is towards the end of calendar year 2020.

(b) If the spectrum auction is held now, should the entire spectrum be put to auction or should it be done in phased manner i.e. auction for some of the bands be held now and for other bands later based on development of eco system etc.? Please give your response band wise and justify it.

If spectrum auction is to be held now, TATA COMMUNICATIONS is of the view that spectrum bands in 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz frequencies can be put on the block. This would especially facilitate the incumbent TSPs who may be in the need for incremental spectrum.

However, for the spectrum bands of 700 MHz and the 3400-3600 MHz, for the reasons as cited against Q1 (a) and in view of the fact that appropriate eco-system is yet to be developed for these bands, TATA COMMUNICATIONS is of the opinion that auction for these bands should be held towards the end of calendar year 2020.

Additionally, in view of the limited technical development worldwide on the 3300-3400 MHz band, and reasons cited in Q1 (a), TATA COMMUNICATIONS is of the view that the band should be kept outside of the purview of auction for now.

Q.2 Do you agree that in the upcoming auction, block sizes and minimum quantity for bidding in 700 MHz, 800 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? Please justify your response.

Yes, TATA COMMUNICATIONS is of the view that block sizes and minimum quantity for bidding in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands, be kept same as in the last auction.

Q.3 What should be optimal block sizes and minimum quantity for bidding in (a) 3300-3400 MHz and (b) 3400-3600 MHz bands, keeping in mind both the possibilities i.e. frequency arrangement could be FDD or TDD? Please justify your response.

TATA COMMUNICATIONS recommends offering blocks in the 5 MHz size (TDD) with the condition that bidders will have to bid for minimum 2 number of such blocks.

Internationally, the growing interest of TSPs in the 3400-3600 MHz band is primarily for providing mobile broadband services. The demand for mobile broadband has been increasing almost exponentially.

Between the FDD and the TDD duplexing schemes, TATA COMMUNICATIONS favors the latter. The FDD duplexing is preferred where both uplink and downlink

data rates are symmetrical (like for voice communication). However, for data traffic, which is inherently asymmetrical and downlink heavy, the FDD duplexing leads to inefficient utilization of the uplink capacity. Consequently, worldwide, all the major telecom carriers are deploying TDD because of its higher spectral efficiency. Since much of mobile broadband traffic is asymmetrical, FDD is less spectrally efficient as it is set-up to use the same amount of uplink and downlink spectrum resources irrespective of the service type. Whereas, with TDD, it is possible to configure the percentage allocation of uplink and downlink resources depending on application requirements. This means that services that require higher downlink capacity than uplink capacity, can have a dynamic allocation as appropriate to that (i.e. a larger downlink and a smaller uplink allocation).

Currently, certain channels from the 3300-3400 MHz band have been allotted to ISP providers like TATA COMMUNICATIONS, in order to provide their BWA services. In case the DoT indeed decides to auction the band now, TATA COMMUNICATIONS strongly recommends allotting these ISPs alternate spectrum immediately so that 3300-3400 GHz band can also be put to auction along with the 3400-3600 MHz band. The speedy allocation of alternate spectrum would help ISPs gain enough time for migrating from the 3300 MHz band to the alternate band and, thus, free up this band for the forthcoming auction.

Q.4 Do you think that the roll-out conditions for 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz stipulated in the last auctions held in October 2016 are appropriate? If no, what changes should be made in the roll out obligations for these bands?

No comments

Q.5 Should there be any rollout obligations in 3300-3400 MHz and 3400-3600 MHz bands? If yes, what should these be? Please justify your response.

No, there should not be any rollout obligations in 3300-3400 MHz and 3400-3600 MHz bands.

Unlike low frequency bands that are appropriate for providing wider coverage, the technical characteristics of 3.3 and 3.4 GHz spectrum bands are not conducive for extendingthe geographical reach.As the high frequency spectrum waves do not travel longer due to higher propagation loses, the cost of providing ubiquitous carpet coverage using these frequencies is going to be prohibitively high. Consequently, as relatively large bandwidth is available in these frequency bands, these can be used primarily to enhance the network capacity in isolated patches (hot spots) wherever required (and not for carpet coverage). Hence, any rollout obligations in the 3300-3400 MHz and 3400-3600 MHz bands would not make a viable business proposition.

Secondly, again, unlike the low spectrum bands, there is no matured eco-system available as on date in the 3.3 GHz or any other high frequency bands. It takes typically 3-4 years for a suitable eco-system to develop. In view of this, TATA COMMUNICATIONS is of the view that there should not be any roll-out obligation for the 3300-3600 MHz spectrum bands.

Q.6 Is there a need to prescribe spectrum cap in bands 3300-3400 MHz and 3400-3600 MHz? What spectrum cap provisions should be kept for 3300-3400 MHz and 3400-3600 MHz spectrum bands? Should these bands be treated as same or separate bands for the purpose of calculation of spectrum cap?

Yes, TATA COMMUNICATIONS recommends prescribing spectrum cap for the 3300-3400 MHz and 3400-3600 MHz bands. We further recommend treating 3300-3400Mhz and 3400-3600MHz bands as one for calculation of spectrum cap and a band specific limit of 40 MHz be imposed on the combined holding in 3300-3400 MHz and 3400-3600 MHz bands. This will ensure that atleast 7 TSPs get the spectrum in these bands.

Q.7 Whether the prices revealed of various spectrum bands in the October 2016 auction can be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016. If indexation is to be done then at what rate?

No, prices revealed in the October 2016 auction should not be taken as the value of spectrum for the forthcoming auction.

The value of spectrum depends on prevailing economic conditions in general and the sector specific conditions in particular. And both these conditions have undergone substantial changes since the last spectrum auction held in October 2016.

Currently, the telecom sector is under severe financial stress. Entry of a new telecom operator in November 2016 has resulted into intense competition, thus impacting both top and bottom lines of all the major telecom players. The revenue generating capability of each bit of data has gone down by 6-7 times and voice calls are almost at zero cost. In such a situation, the perceived value of spectrum cannot be the same as what it was before November 2016.

In summary, while there is northward pressure on the cost, the revenue has been heading southward sine past 3-4 quarters. Both these things, put together, are going to change perceived value of the spectrum. Hence, in of the above, TATA COMMUNICATIONS is of the view that auction determined price of October 2016 should not be considered as a spectrum value for the current round of auctions.

Q.8 If the answer to above question is negative then, whether as per the practice adopted by TRAI in the previous valuation exercise, the valuation for respective spectrum bands be estimated on the basis of various valuation approaches/methodologies (Referred in Annexure 3.3) including those bands (in a LSA) for which no bids were received or spectrum was not offered for auction?

Yes,for the reasons as stated against Q7 response, there is a need to go for a fresh valuation of spectrum bands including those for which no bids were received or spectrum was not offered for auction.

Q.9 Whether the value of 700 MHz spectrum should be derived by relating it to value of other bands by using technical efficiency factor? If yes, with which spectrum band this band be related and what efficiency factor or formula should be used? Please justify your views with supporting documents.

In absence of availability of cost, revenue and other financial and non- financial information on the 700 MHz band, technical efficiency is the better option to assess its value. For the October 2016 auction, the value of 700 MHz was arrived at based on its technical efficiency vis-à-vis the 1800 MHz band and was set at 4 times that of the 1800 MHz value. However, the October 2016 auction failed to attract any bidder from any of the 22 circles; thus, indicating that it was over-priced. Hence, we are of the opinion that there is a need for downward revision of the 700 MHz spectrum value.

The report of ZTE on 'APT 700MHz Best Choice for Nationwide Coverage' estimates minimum technical efficiency of the 700 MHz band across dense urban, urban, suburban & rural areas as that of 3.5 times the 1800 MHz band (Table 3.1 Uplink Coverage Comparison of Typical Scenarios / page 9).

TATA COMMUNICATIONS is of the view that the RP of the 700 MHz band should be set at 80% of the price arrived at by assuming its technical efficiency as 3.5.

RP of 700 MHz band = 80% x 3.5 x Auction determined price of 1800 MHz band

Q.10 Else, what valuation approach should be adopted for the valuation of 700 MHz spectrum band? Please support your valuation approach with detailed methodology and related assumptions.

Technical efficiency vis-à-vis the spectrum bands such as 1800 MHz is the better way of assessing the spectrum value of the 700 MHz band.

Q.11 Whether the value of October 2016 auction determined prices be used as one possible valuation for 2300 MHz spectrum for the current valuation exercise? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016? Please justify your response with supporting documents/ report(s), if any.

In principle 'Yes', but not at the face value.

Asmentioned earlier in response to Q1, currently, the telecom sector is under severe financial stress. Entry of a new telecom operator last year has resulted into intense competition, thus impacting both top line and bottom line of all the major telecom players. Due to hyper competition, concerns are being expressed about the capability of the companies to meet their contractual financial commitments. All the preceding things are indicative of precarious financial health of all the telecom players. The impact of all these factors, along with the impact of new tax regime in the form of GST, needs to be factored into while working out true value of the 2300 MHz spectrum band.

As to indexation for the time gap, we are of the view that it should not be done so for the reasons as mentioned above. All the telcos are under severe financial stress without any appetite for absorbing any incremental cost escalation at this juncture.

Q.12 Whether the value of the 2300 MHz spectrum should be derived by relating it to the value of any other spectrum 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 documents.

No, it should not be.

Technical efficiency as a means of valuation makes sense if there is no auction determined value for that band. As to the 2300 MHz spectrum, it was auctioned twice before and both the times, the entire block of spectrum was sold out. In short, there is auctioned determined value available for it. Hence, it is appropriate to determine its value for the current auction based on its past auction value rather than determining based on technical efficiency.

Q.13 Whether the valuation of the 2500 MHz spectrum should be equal to value of similarly placed spectrum band? If no, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting documents /report(s)/ detailed methodology, if any.

Yes, the value of 2500 MHz spectrum should be equal to the value of the 2300 MHz band as these two bands are so close that, statistically, there is hardly any efficiency differbetween them.

Q.14 Whether the valuation of the 3300-3400 MHz spectrum bands and 3400-3600 MHz spectrum bands 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, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting documents.

As mentioned in response to Q1 (a), there doesnot seem to be a need for a revised valuation for 3300-3400 MHz /3400-3600 MHz spectrum bands. In its recommendations on "Allocation and pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers", released on 29/08/2014, the TRAI stated in section 5.14 that "spectrum charges for MWB link shall be Rs. 13,900 per km per annum". Further, in section 5.15 it states that "present spectrum charges for terrestrial Point-to-Point MW links (other than MWB links used in cellular network) should be rationalized and should be the same as have been recommended for MWB links". TATA COMMUNICATIONS employs 3300 MHz band to deploy point-to-point MW links. Therefore, as per TRAI's own recommendation, 3300 MHz should be priced on a link-by-link basis at Rs. 13,900 per km per annum, as against the current proposal to auction the band.

However, if the TRAI were to indeed recommend auctioning of the aforementioned band, TATA COMMUNICATIONS holds the following view -

The valuation of any new spectrum band is dependent on the availability of cost, revenue and other financial and non-financial information pertaining to that band. However, unlike the other spectrum bands, neither the auction determined value nor the other related information like financial and non-financial, is available for the 3300-3400 MHz and 3400-3600 MHz spectrum bands. Hence, in absence of these, technical efficiency method of determining spectrum value seems to be the more appropriate approach.

The closest band for which the auction determined value is available is the 2300 MHz / 2500 MHz band. Hence, we suggest ascertaining value of the 3300-3400 MHz and the 3400-3600 MHz bands based on technical efficiency of these bands vis-à-vis the 2300/2500 MHz band.

In order to ascertain technical efficiency of the 3.3 GHz band vis-à-vis the 2.5 GHz band, TATA COMMUNICATIONS undertook 'coverage analysis' exercise for a typical representative city like Pune, results for which are as summarized in the following table:

IMPACT OF FREQUENCY ON BASE STATION DENSITIES					3.3Ghz/ 2.5GHz Density Ratio (SD)
City	Clutter Type	Covered Clutter Area (sq km)	Frequency Band: BS COUNT		
			3.3 GHz	2.5 GHz	
Pune	Dense urban	101	211	98	
	Urban	19	25	8	
	Suburban	199	185	92	
	Total	**319**	**421**	**198**	2.13

Table-1: Base-station density comparison for 2.5GHz & 3.3 GHz mobilenetwork

With typical link budget parameters and configuration, uplink coverage is limited. A comparison based on the uplink edge rate from dense urban to rural environments utilizing 2.5GHz and 3.3GHz is shown in Table -1 above. From the results, to cover the same area, the number of sites required for 3.3 GHz will be around 2.2 times higher than what is required for 2.5 GHz band.

Hence, TATA COMMUNICATIONS recommends considering 2.2 as the technical efficiency of the 3.3 GHz band vis-à-vis the 2.5 GHz band.

Q.15 Is there any other valuation approach than discussed above or any international auction experience/ approach that could be used for arriving at the valuation of spectrum for 700/800/900/1800/2100/2300/2500/3300-3400/3400-3600 MHz bands? Please support your suggestions with detailed methodology and related assumptions.

No comments.

Q.16 Whether value arrived at by using any single valuation approach for 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.

TATA COMMUNICATIONS believes that it is not possible to deterministically ascertain if any one valuation is the 'right' valuation. Each model has certain strengths as well as limitations. Where some models better capture intrinsic technical features, others are more strongly grounded in economic and market realities. So, no one model completely captures every variable- technical, economic, sectoral, geographic and regulatory- that influences the valuation of spectrum.

However, for any new spectrum band put on the block, for which there is no auction determined price available, a single valuation approach based on technical efficiency seems to be more reasonable and acceptable method of valuation for that band.

Q.17 In case your response to Q16 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, as adopted by the Authority since September 2013 recommendations? Please justify your response.

Yes, it is appropriate to take average of the values obtained through different approaches.

The multipronged approach, whereby a reasonable valuation is obtained from an appraisal of the results of different models, has a high probability of realization in the actual world. The TRAI believes it is better to be 'vaguely right' rather than 'precisely wrong'.

Q.18 Is it appropriate to recommend Reserve price as 80% of the value? If not, then what should be the ratio adopted between the reserve price for the auction and the valuation of the spectrum in different spectrum bands and why?

The TRAI is urged to pay attention to the prevailing economic conditions in the country and severe financial stress faced across the sector. Even at a reserve price of 80% of the average value, the last round of auction held in October 2016 saw limited to no participation for certain bands. The underlying principle of an auction is to discover the market price of a commodity. Therefore, TATA COMMUNICATIONS is of the view that the 'Reserve Price (RP)' be revised from 80% of the average perceived valuation to a range of 60-80%.

Q.19 Whether the realized / auction determined prices achieved in the October 2016 auction for various spectrum bands can be taken as the reserve price in respective spectrum bands for the forthcoming auction? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016? If yes, then at which rate the indexation should be done?

No, October 2016 auctioned determined price should not be taken as a reserve price for the reasons as stated herein below.

In the October 2016 auction, of all the spectrum chunks that wereput on the block, around 60% of it remained unsold. There were certain bands, like 700 MHz and the 900 MHz, that did not attract any bid. Even for the partially sold bands, most of the spectrum was sold at the base price (i.e. RP). All these facts are indicative of only one thing, that is, spectrum from most of the spectrum bands was overpriced. The TSPs purchased only that much which was absolutely essential to survive in the market. Hence, we are of the view that there is an urgent need to revise prices downward in order to boost demand for the spectrum.

In this context, we suggest considering October 2016 auctioned determined prices as one of the valuation approaches and setting 'reserve price' as 80% of that value. This seems more rational in view of following facts as well.

Currently, the telecom sector is under severe financial stress. Entry of a new telecom operator last year has resulted into intense competition, thus impacting both top line and bottom line of all the major telecom players. Due to hyper competition, concerns are being expressed about the capability of the companies to meet their contractual commitments. All the preceding things are indicative of precarious financial health of all the telecom players.

In such a situation, setting reserve prices to October 2016 auction determined price or indexing it further, is not expected to attract buyers' attention much.Hence, October 2016 auctioned determined price should not be taken as a reserve price for the forthcoming auctions.