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SSTL/Reg/TRAI/1401/13  
15/1/2014

Dr Rahul Khullar  
Chairman,  
Telecom Regulatory Authority of India  
Mahanagar Doorsanchar Bhawan,  
New Delhi

**Subject: Response to Consultation Paper on Reserve Price for Auction of Spectrum in the 800 MHz Band**

Dear Sir,

1. We are thankful for giving us an opportunity to give our comments on issues concerning Reserve Price for Auction of Spectrum in 800 MHz Band.
2. TRAI has raised an issue in paragraph 3.11 of the consultation paper on possibility of imposing restrictions on Sistema Shyam Teleservices Ltd (SSTL) for participation in next 800 MHz auction in 8 service areas where it had bought the spectrum in the auction held in March 2013. These restrictions are proposed on a ground that SSTL had bought spectrum at a price that was 50% of the TRAI's recommended reserve price for a sub-5 MHz sale but now it can buy additional spectrum to consolidate holding to 5 MHz. We are of view that these restrictions are not called for various technical and commercial considerations and also these restrictions would be unfair.
3. The restrictions on SSTL are not called for as apprehension given in the consultation paper regarding consolidation of 800 MHz spectrum band and possible benefits are not valid. Next generation technologies like LTE cannot be efficiently deployed in 5 MHz spectrum unless frequencies are contiguous. The spectrum to be auctioned in Feb 2014, for both 900 MHz & 1800 MHz bands is contiguous and service providers can buy 5 MHz contiguous spectrum. However, the same is not the case in 800 MHz band. The spectrum available with SSTL is non-contiguous spectrum and allocated frequencies are spread across the 800 MHz spectrum band which cannot be used to deploy advanced LTE networks or even run CDMA based EVDO services across frequencies as carrier aggregation beyond certain bandwidth is not possible. Thus 900 MHz and 1800 MHz spectrum bands command premium over 800 MHz spectrum band and the Empowered Group of Ministers are justified in their decision to reduce reserve price for 800 MHz spectrum band in March 2013.
4. In the ensuing auction of Feb 2014, the reserve price for 1800 MHz Contiguous spectrum is much lower than the price at which SSTL bought non-contiguous 800 MHz spectrum. Even the current reserve price for highly precious contiguous 900 MHz for Delhi is lower than the price at which SSTL bought non-contiguous 800 MHz spectrum in Delhi. Notwithstanding it, if TRAI singles out SSTL and imposes restriction for the forthcoming 800 MHz auctions would be unfair.
5. The TRAI has recommended lower reserve prices for 900 and 1800 MHz bands as there was lack of interest by bidders in previous auctions due to high reserve price. Changed economic situation and sector specific conditions also required fresh valuation of 1800/900 MHz bands. The final reduction in reserve price is 25%/47% for 1800/900 MHz bands.

**Sistema Shyam TeleServices Limited**  
A Sistema Shyam Company

Corp. Office: 334, Udyog Vihar, Phase-IV, Gurgaon-122001. Ph.: 0124-4812500.  
Regd. Office: MTS Tower, 3 Amrapali Circle, Vaishali Nagar, Jaipur -302021, Rajasthan.



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6. Like 900/1800 MHz bands, there was also lack of interest in 800 MHz auctions due to very high reserve price. The reserve prices were so high that SSTL had to close down its 13 operating circles. The valuation on 800 MHz should be lower than 900/1800 MHz bands as spectrum being offered in non-contiguous and not fit for deployment of advanced technologies like LTE. The 850LTE ecosystem also does not justify higher reserve price for 800 MHz band as it is not as developed as ecosystem for LTE1800 MHz band.
7. The Authority in its recommendations over years has brought down valuation of 1800 MHz spectrum band. The valuation for 1800 MHz was Rs 4571 crores per MHz in Feb'2011 and now it has been reduced to Rs 1872 crores. The reduction in valuation is 58% in two consecutive exercises carried out in 2012 and 2013. The summary of TRAI recommendations on 1800 MHz valuation is given below:

TRAI recommendations	8 <sup>th</sup> Feb, 2011 (>6.2MHz)	23 <sup>rd</sup> April, 2012	9 <sup>th</sup> September, 2013
Per MHz valuation in 1800 MHz band	4571 crores	4527 crores	1872 crores

8. Based on TRAI recommendations, EGoM/Cabinet have approved following reserve prices for 1800 MHz band:

DOT Determinations	Nov'2012	Dec'2012 (One Time Charge)	Feb'2014
Per MHz Reserve Price for 1800 MHz	2800 crores	2378.6 crores	1762 crores

9. Thus, TRAI/DoT have been recommending/reducing the valuation/reserve price of 1800 MHz spectrum band time after time to increase demand and participation in 1800 MHz auction. There was no participation for 800 MHz in 13 circles in previous auction. Thus there is a strong case to reduce 800 MHz reserve price and revive operator's interest in 800 MHz band. Any attempt to increase reserve price would again see no participants in 800 MHz band and it would also be inconsistent with valuation methodology for 900/1800 MHz which resulted in significant decrease in reserve price.
10. We are enclosing herewith our question wise response for your perusal. We do hope the TRAI would consider our response while framing the recommendations on Reserve Price for Auction of Spectrum in the 800 MHz Band.

Thanking you,

Yours faithfully,

For **Sistema Shyam Teleservices Ltd**

  
**T Narasimhan**  
Dy Chief Executive Officer

CC: 1. Sh RK Arnold, Member  
2. Smt Vijayalakshmy  
5. Shri Sudhir Gupta, Pr. Advisor  
7. Sh Arvind kumar, Advisor

3. Shri Rajeev Agrawal, Secretary  
4. K Gupta, Member  
6. Smt Anuradha Mitra, Pr Advisor



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## Response to the issues raised in Consultation Paper on Reserve Price for Auction of Spectrum in the 800 MHz Band

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1. Sistema Shyam TeleServices Ltd (SSTL) welcomes the opportunity to respond to TRAI's consultation Paper on "**Reserve Price for Auction of Spectrum in the 800 MHz Band**".
2. We have noted that the Authority in its Consultation Paper has made certain observations/suggestions which have a relation to SSTL. These observations/suggestions in paragraph 3.11 of the Consultation Paper have been made as a background to Issue No. 4 on which comments have been sought. SSTL feels any restriction on SSTL for participation in next 800 MHz auction would be unfair and therefore deem it necessary to provide our comments on the observations as also place certain facts for the consideration of Authority with respect to the spectrum allocated to SSTL consequent to the previous auction held in March, 2013.
3. At Paragraph 3.11 of the Consultation Paper, the Authority has observed as under:-
  - (a) In the auction held on March 2013, one bidder acquired 3 blocks of spectrum of 800 MHz in 8 LSAs. Now, if spectrum is put up for sale in the 8 LSAs in which one of the TSPs (SSTL) was successful in acquiring 3 blocks of spectrum in the March 2013 auction, and **the same TSP is able to acquire even a single block of spectrum (1.25 MHz) in any one of these LSAs, it will have a total holding of 5 MHz of spectrum in that LSA enabling it to provide all the services possible on truly liberalized spectrum.**
  - (b) It may be noted further that the same TSP (SSTL) that reaches a holding of 5 MHz in 8 LSAs in the forthcoming auction in the manner described above, **would have acquired 3.75 MHz spectrum in the previous auction, at a price that was 50% of the recommended reserve price for a sub-5 MHz sale.**
  - (c) Suitable ways may have to be devised to deal with this anomaly; for example, **restrictions may have to be placed on participation in the 8 LSAs where the spectrum was sold in the auction held in March 2013.**
4. In the context of the observations of the Authority as quoted at Para 2(a) above, the Authority is requested to consider the following :-



### A. SSTL paid price higher than true valuation for 800 MHz Band

- 4.1. The Authority's perception that SSTL has bought spectrum at price decided for sub-5MHz holdings is wrong. SSTL had participated in spectrum auction for which reserve price was approved by the EGoM and Cabinet. Cabinet reduced reserve price for 800 MHz by 50% in all circles and not particularly sub- 5 MHz circles as no bids were received at reserve price decided for earlier auction held in Nov'2012. Likewise the reserve price was also reduced by 30% for 1800 MHz band in 4 circles where no bids were received during auctions held in November, 2012. A copy Government press release dated 17.1.2013 is enclosed at Annexure I.
- 4.2. The imposition of any restriction on SSTL would be unfair as the reserve price for 1800 MHz contiguous spectrum in the ensuing is even lower than the price at which SSTL bought non-contiguous 800 MHz spectrum. Even the current reserve price for highly precious contiguous 900 MHz for most lucrative Delhi circle is also lower than the price at which SSTL bought non-contiguous 800 MHz spectrum in Delhi. The Table 1 below gives the comparison of price paid by SSTL for non-contiguous 800 MHz spectrum and new reserve price for contiguous 900/1800 MHz spectrum bands to establish that the price paid by SSTL to acquire spectrum is much higher than the true value.

Table 1

Sr. No.	Service Area	800 MHz spectrum price per MHz	1800 Price per MHz as per NIA 12.12.13	900 Price per MHz as per NIA 12.12.13
		Rs crores		
1	Delhi	360.39	219	360
2	Gujarat	116.92	143	
3	Karnataka	171.66	155	
4	Kerala	59.13	52	
5	Kolkata	59.13	73	125
6	Tamil Nadu	159.16	208	
7	Uttar Pradesh (W)	55.85	62	
8	West Bengal	13.43	21	
	<b>Total</b>	<b>995.70</b>	<b>933</b>	



## **B. Suggestion that there may be restriction on SSTL for participation in 800 MHz Auction in circles it bought spectrum would be unfair**

- 4.3. At the time of participation in March 2013 auction, it was not perceived/conveyed that there could be restrictions on SSTL on the future growth on spectrum in 800 MHz bands. It is pertinent to note that even during the March 2013 auctions, only 3 carriers were made available for auction and putting any kind of restrictions on SSTL would be anti-competitive and discriminatory. The participation in the March 2013 was based upon the understanding that 800 MHz would be treated fairly and all opportunities for future growth would be made available.
- 4.4. Further, restriction on SSTL for participation in coming 800 MHz auction was not part of previous NIA and thus it tantamount to improving Notice for Inviting Application dated 30th January, 2013. The spectrum bought in the previous 800 MHz auction is bound by conditions given in the NIA which does not impose any limitation on expansion or growth of services by acquiring additional 800 MHz spectrum.
- 4.5. The NIA clearly specifies that 800 MHz spectrum auctioned in March'2013 can be used to deploy any technology. As Cabinet and EGoM have approved reduction of reserve price for 800 MHz as well as 1800 MHz it would not be correct at this stage to impose new restrictions for further participation in subsequent auction. This would amount to retrospective amendment of NIA dated 30th January, 2013 and we believe with such restrictions major uncertainties would be created in our business.

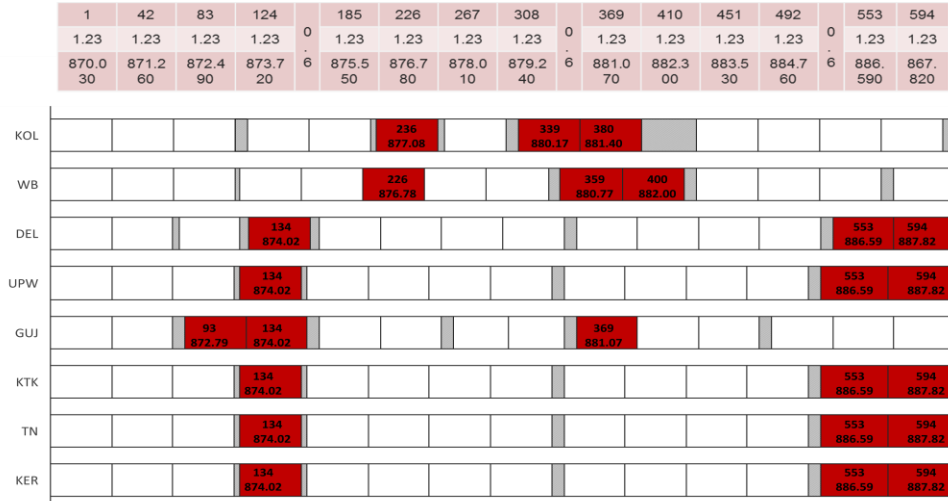
## **C. Spectrum Allocated to SSTL in previous auction in non-contiguous and not viable for efficient LTE deployment**

- 4.6. Next generation technologies like LTE need a minimum channel bandwidth of a contiguous 5 MHz for efficient spectrum utilization. Non-contiguous spectrum causes significant inefficiencies in the delivery of LTE services, leading to slower service speeds and increased service delivery costs for both network operators and consumers.
- 4.7. The spectrum available with SSTL is non-contiguous spectrum and allocated frequencies are spread across the 800 MHz spectrum band which cannot be used to deploy LTE networks efficiently. The spectrum allocated to SSTL is given in the following chart for reference. Thus 900 MHz and 1800 MHz spectrum bands



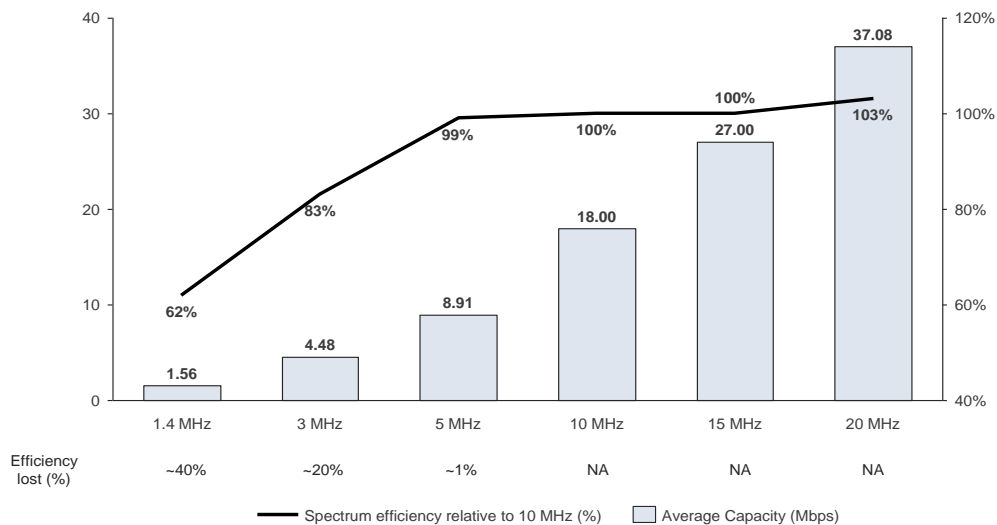
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which are contiguous command a premium over 800 MHz spectrum band. The Empowered Group of Ministers and the Cabinet have fully justified in their decision to reduce reserve price for 800 MHz spectrum band in March 2013.



4.8. The most cost effective and efficient way to deploy LTE services in any band is via a contiguous block of spectrum. The smaller and non-contiguous spectrum blocks increase deployment costs.

4.9. The chart below illustrates the relative spectrum efficiency of LTE in different allocated bandwidths, compared to a baseline allocation of 10MHz paired. It shows significant spectrum efficiency reductions below a 5MHz paired allocation. For this reason, spectrum bought by SSTL cannot be used for efficient deployment of LTE without incurring significant costs as compared to contiguous allocation.





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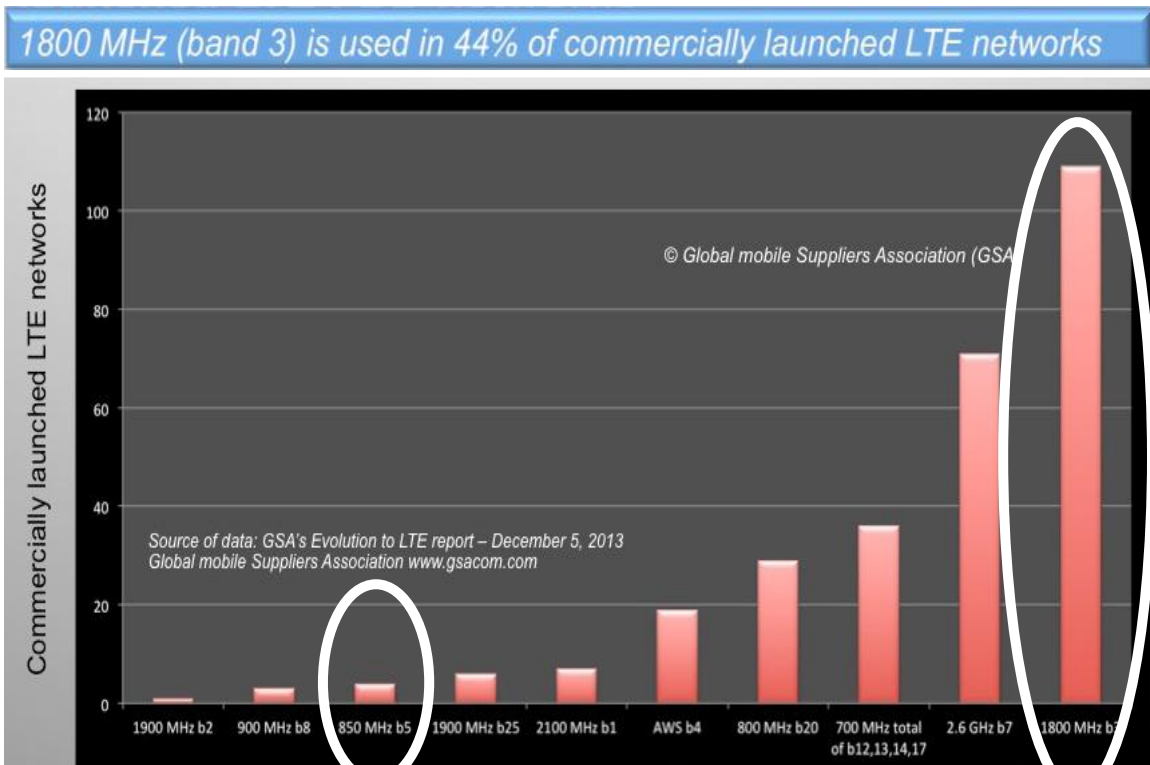
#### **D. Spectrum Allocated to SSTL in previous auction is spread across 800 MHz bandwidth and not fit for even efficient deployment across all carriers**

4.10. The existing frequency spots allocated to SSTL are not adjacent to each other and in some LSAs separated by more than 10 MHz leading to inefficient usage even for EVDO services. Carrier Aggregation beyond 5MHz is not possible as per the existing algorithms & chipset available in the market. To use the entire spectrum, additional radio amplifiers need to be put in each base station. Radio amplifiers are the most expensive element of a base station and therefore disaggregated or non-contiguous spectrum allocated to SSTL does not help to deliver efficient EVDO services across all carriers. This will impact cost of delivery and peak data speed throughput.

#### **E. Ecosystem for LTE 850 much less developed than LTE1800**

4.11. Besides fragmented spectrum availability in 800 MHz, it may also be noted that 1800 MHz is the most widely used band for LTE deployments globally and is greatly assisting international roaming. User device eco-system for LTE1800 has matured with an excellent choice of user devices available now. Out of total 1,240 LTE user devices that have been announced, one third i.e. 412 devices are in 1800 MHz band. These devices are mostly handsets, tablets, and dongles. Within period of 2 months between September, 2013 and November, 2013, more than 50 new LTE1800 smartphones have been launched. LTE1800 networks have already been commercially launched in 58 countries. Having regard to the scale of network deployments and maturity of the user devices ecosystem, LTE1800 is now considered to be the mainstream systems technology.

4.12. However, on the other hand there are almost insignificant launches of 850 LTE smartphones. The 850 LTE (band 5) commercial networks are less than 5. It is evident from the chart given in the consultation paper and reproduced below that 44% of commercial LTE networks are in 1800 MHz band. The economies of scale for infrastructure and devices are available only for LTE1800. Thus valuation of 800 MHz would also have to take this issue into consideration.



4.13.

**Like 900 MHz and 1800 MHz, Reserve Price for 800 MHz should reduce**

5. Apart from the above, SSTL requests the Authority to **consider to fix a reduced reserve price for 800 Mhz**. In this context the following is noteworthy.
6. The Authority has carried out fresh valuation for 900 and 1800 Mhz bands while taking note of following:
  - a) There was lack of interest by bidders due to high reserve price. Changed economic situation and sector specific conditions required fresh valuation of 1800/900 MHz bands;
  - (b) 1800 MHz is contiguous and the most widely used band for LTE deployments globally and is greatly assisting international roaming. The reserve price for 1800 MHz has been reduced by 25%;
  - (c) 900 MHz band is contiguous and is being used for UMTS deployment. One of the biggest operator in India has already issued RFP for UMTS deployment in 900 MHz band. The reserve price for 900 MHz band has been reduced by 47%.





- 7. Like 900/1800 MHz bands, there was no participation in 800 MHz band in most circles. As the experience shows that the due to high reserve price, there was total lack of interest in the auction and the participation was almost nil. There is need to look afresh at 800 MHz reserve price and reduce it significantly so that there is larger participation in auction.
- 8. The Authority in its recommendations over years has brought down valuation of 1800 MHz spectrum band. The valuation was Rs 4571 crores per MHz in Feb'2011 and now reduced to Rs 1872 crores. The reduction of 1800 MHz valuation was 58% in two consecutive exercises carried out in 2012 and 2013. The summary of TRAI recommendations on 1800 MHz valuation is given below:

TRAI recommendations	8 <sup>th</sup> Feb, 2011 (>6.2MHz)	23 <sup>rd</sup> April, 2012	9 <sup>th</sup> September, 2013
Per MHz valuation in 1800 MHz band	4571 crores	4527 crores	1872 crores

- 9. Based on TRAI recommendations, EGoM/Cabinet have approved following reserve prices for 1800 MHz band:

DOT Determinations	Nov'2012	Dec'2012 (One Time Charge)	Feb'2014
Per MHz Reserve Price for 1800 MHz	2800 crores	2378.6 crores	1762 crores

- 10. Thus, TRAI/DoT have been recommending/reducing the valuation/reserve price of 1800 MHz spectrum band time after time to increase demand and participation in 1800 MHz auction. There was no participation for 800 MHz in 13 circles in previous auction. **Thus there is a strong case to reduce 800 MHz reserve price and revive operator's interest in 800 MHz band. Any attempt to increase reserve price would again see no participants in 800 MHz band and it would also be inconsistent with valuation methodology for 900/1800 MHz which resulted in significant decrease in reserve price.**
- 11. As mentioned above, 900/1800 MHz bands are contiguous and ready for deployment of advanced technology deployment like LTE. The spectrum being auctioned in 800 MHz is non-contiguous and at present can only be used for CDMA services. Further eco-system of LTE850 is not as developed as LTE1800.. Therefore, there should be major reduction in 800 MHz pricing compared to 900/1800 MHz bands.



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12. Considering the above factors, EGoM had recommended lower reserve price for 800 MHz spectrum in 2013 and on the basis of its recommendations, Cabinet approved lower price for 800 MHz band in January 2013. The reserve price for 800 MHz spectrum band was fixed at 0.65 times the reserve price for 1800 MHz spectrum band in the auction held in March, 2013. The ratio of reserve prices decided earlier is close to true valuation of 800 MHz and 1800 MHz spectrum bands.

13. **In view of the above, SSTL submits that:**

- (a) There should be no restriction on SSTL for participation in next 800 MHz;**
- (b) There is strong case to reduce reserve price for 800 MHz bands;**
- (c) The reserve prices for 800 and 1800 MHz bands decided by Cabinet represent true relative value for these spectrum bands and must be taken into consideration while fixing/determining the reserve price.**

### **Comments on Specific Issues raised in the Consultation Paper**

**Q.1. What should be the quantum of spectrum in the 800 MHz band that should be put up for auction?**

- (i) 100% of the available spectrum in the band should be put up for Auction.

**Q.2. What should be the block size in the 800 MHz band?**

- (i) 800 MHz spectrum should be auctioned in block size of 1.25 MHz block size and operators should be allocated complete 1.25 MHz instead of prevailing practice of allocation only 1.23 MHz.
- (ii) Currently 800MHz band can be used only to provide CDMA services, and to provide CDMA services minimum 1.25MHz block size is required. There is no clarity on the deployment of LTE services in the 800MHz spectrum band in India due to fragmented spectrum allocation and also the under developed LTE ecosystem currently in 800MHz worldwide. TSP after acquiring the spectrum can't keep it idle and wait for the technology to mature, thus to deploy current technology in the band at least 1.25MHz block is needed.



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**Q.3. Should the value of 800 MHz spectrum be derived on the basis of the value of 1800 MHz spectrum using technical efficiency factors?**

- (i) No, valuation of 800 MHz spectrum cannot be estimated on the basis of technical efficiency alone. Technical efficiency is important factor in valuation if spectrum bands are complimentary as in the case of 900 MHz and 1800 MHz bands which are being currently used for GSM technology.
- (ii) 1800 MHz and 800 MHz are LTE bands but it needs to be kept in mind that 1800 MHz band is contiguous spectrum and ready for LTE deployment. However, same is not the case in 800 MHz band thus preventing operators from migrating to LTE.
- (iii) **Thus it would be incorrect to decide the 800 MHz reserve price on the basis of 1800 MHz valuation adjusted for technical efficiency.**

**Q.4. Is there any case for application of a lower efficiency factor (1.3) over the valuation of 1800 MHz spectrum, for determining the valuation of 800 MHz, as was done in the previous auction? If yes, give detailed reasons for the same.**

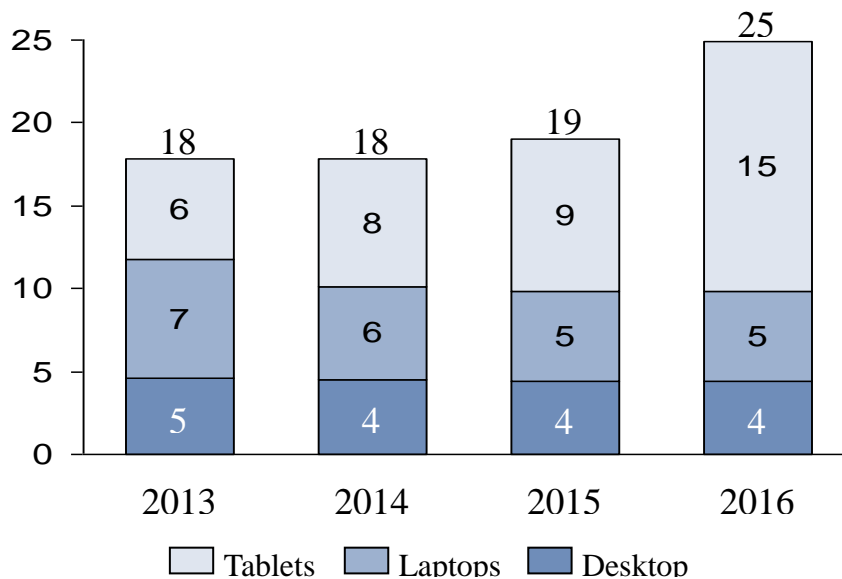
- (i) Spectrum available in 800 MHz band is less than 5 MHz in most LSAs and is non-contiguous and cannot be used for efficient LTE deployment. Even if the existing operators acquire additional blocks and consolidate their holding to 5 MHz still spectrum would be non-contiguous, leading to inefficient use. There is limited spectrum (20 MHz) in 800MHz band; so there is no option for operators to increase their spectrum holding in this band. There would be lot of challenges in running both Data & Voice services even with 5 MHz spectrum and provide competitive services in future.
- (ii) Lack of Infrastructure & device eco-system for CDMA/EVDO/UMTS/LTE in 800 MHz band is another factor which impacts 800 MHz valuation. LTE in 800MHz is an emerging deployment in few pockets and the maturity, adoption and ecosystem development is yet to be ascertained. Till such time the ecosystem develops this spectrum can only be used for CDMA technology, which is already facing a dwindling ecosystem.
- (iii) In view of the above, **there is no case for efficiency factor of 1.3 over the valuation of 1800 MHz spectrum, for determining the valuation of 800 MHz. It would be unfair and not consistent with market reality to value 800 MHz at efficiency factor of 1.3 or above.**
- (iv) EGoM had recommended lower reserve price for 800 MHz spectrum in 2013 and on the basis of its recommendations, Cabinet approved lower price for 800 MHz band in January 2013. The reserve price for 800 MHz spectrum band was fixed at 0.65 times the reserve price for 1800 MHz spectrum band in the auction held in

March, 2013. **The efficiency factor of 0.65 decided by Cabinet is close to true valuation of 800 MHz and 1800 MHz spectrum bands.**

**Q.5. Should the value to be paid for 800 MHz spectrum be based upon the potential growth in data services? If yes, please state whether you agree with the assumptions made.**

- (i) We agree that DCF method is most suitable for correct valuation of spectrum but **reasonable and fair assumptions are pre-requisite for correct valuation.**
- (ii) We do not agree that 800 MHz spectrum valuation can be based upon potential growth in Data Services alone as Data services backed by good 2G voice is the need of the day. Smartphone usage is picking up and this is being used to access voice as well as data services. Any operator not offering reliable voice services will have difficulties to grow in Data services. Serious lack of Smartphone device eco-system for CDMA/EVDO technology is a handicap for data services growth. Data Dongles alone cannot form the basis of potential earning & positive business case for any operator. The chart below illustrates the declining trends in PC shipments, thus posing significant threat to dongle business.

**Device Sales Projections till 2016 (Mn)**



Source: IDC

- (iii) TRAI has suggested following assumption for valuation of 800 MHz spectrum which **we do not support** and if applied would lead to wrong estimation of 800 MHz spectrum valuation:

- a) Auction of 800 MHz spectrum will be for liberalized use and demand for 800 MHz spectrum will not be confined to TSPs using 800 MHz for providing CDMA services.
- b) Over the next 20 years, the share of the 800 MHz band in the total revenue from data services will be around 25% in each LSA.
- c) The number of subscribers will grow at a tapering rate, starting from 6% in 2014-15.
- d) Revenue per unit of usage from data services as well as non-data services remain the same over the next 20 years.

(iv) The assumptions given in the consultation paper for valuation of 800 MHz band are **incorrect for the following reasons:**

- The 800 MHz spectrum being auctioned is non-contiguous and cannot be used to deploy LTE efficiently.
- Total spectrum available in 800 MHz is only 20 MHz and out of it only 12 carriers are available in major markets like Delhi and Mumbai. Thus the spectrum availability in 800 MHz is only 10% of the total access spectrum in 900, 1800, 2100 and 2300 MHz spectrum bands. The 800 MHz spectrum is non-contiguous and not ready for LTE deployment. The share of 800 MHz spectrum would further decline once 700 MHz and additional 3G spectrum is released for data service deployment. Thus with 5-6% non-contiguous spectrum holding in 800 MHz band, the assumption that it would generate 25% of total data revenues is highly exaggerated. The correct assumption for data revenue in 800 MHz would be around 5-6% .

	800 MHz	900 MHz	1800 MHz	2100 MHz	2300 Mhz	% of Access Spectrum in 800 MHz Band
Delhi	17.5	22.2	55	20	60	10.0%
Mumbai	17.5	22.2	55	20	60	10.0%

- Even all 800 MHz carriers channels allocated cannot be used for EVDO deployment efficiently as carriers are spread across 800 MHz bandwidth and radio systems can support only those carriers which are in 10 MHz bandwidth.
  - Smartphones are being increasingly used as modems resulting in reduction in demand for 800 MHz dongles. Smartphone usage in 800 MHz is almost negligible.
  - As a general market trend when data usage increase, tariffs fall and do not remain constant as has been assumed above. The revenue does not grow at the same rate as consumption of services. Thus TRAI should consider fall in tariff by 5-8% every year.
  - More data player with UMTS/LTE 4G are expected to launch services in 900/2300 MHz bands which would result in significant reduction in tariffs and increased market competition; thus further reducing the share of 800MHz in overall data market.
  - 850 LTE eco-system is not as developed as LTE1800.
- (v) In view of the above we request TRAI to take correct and take reasonable assumptions relating to revenue and potential growth of data service in 800 MHz band.
- (vi) It would be fair to take following assumptions for 800 MHz valuation:
- Market share in terms of revenue of 800 MHz is taken as 5-6% for data services
  - Data tariff to decline by 5-8 % every year.

**Q.6. Should the value of spectrum in the 800 MHz band be assessed on the basis of producer surplus on account of additional spectrum? If you are in the favour of this method, please furnish the detailed calculations and relevant data along with results.**

- (i) We do not support to use producer surplus method for 800 MHz spectrum valuation.
- (ii) There are substantive errors in this method. Technical efficiency alone is not sufficient to estimate the spectrum valuation. The commercial value is important for correct spectrum valuation. The spectrum valuation should take into account the revenue gain, and not just technical gains.

- (iii) Commercial value of harmonized spectrum bands with developed eco system have much higher value compared to unharmonised bands or bands with not fully developed eco system. This important aspect has not been captured in producer surplus methodology.
- (iv) As revenue earning capacity or commercial value of the spectrum especially for established operator has totally been ignored in 'Production Function' model, we do not support spectrum valuations on basis of this model.

**Q.7. Should the value of spectrum in the LSAs in India for 800 MHz be determined by utilizing the data on international prices? What other variables do you suggest for arriving at robust value estimates using the multiple regression approach? Is there any alternate approach for valuation of spectrum in 800 MHz using the data on international auctions?**

- (i) We do not agree that value of spectrum in the LSAs in India for 800 MHz can be determined by utilizing the data on international prices for contiguous 700 MHz spectrum band.
- (ii) The spectrum to be auctioned in 800 MHz is fragmented, non-contiguous which is not efficient for LTE deployment and also all carriers cannot be used for EVDO. The international valuation could be used for estimating 800 MHz valuation if the comparison is apple to apple rather than apple to orange.
- (iii) Just benchmarking against price per MHz in PPP terms is not the right way as it ignores factors like quantum of spectrum offered, competition in the market, ARPU levels, profitability etc. thus providing wrong estimations.
- (iv) Hence, we do not support price determination on the auction results in various European countries for auction of 791-862 MHz bands.

**Q.8. Apart from the approaches discussed in the paper, is there any alternate approach for valuation of spectrum in 800 MHz that you would suggest? Please support your answer with detailed data and methodology.**

- (i) The best approach of spectrum valuation is DCF method suggested and discussed above.
- (ii) However, the correct results would depend on assumption, which require a relook. The spectrum is non-contiguous and can get maximum of 5-6% of data revenues.



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- (iii) TRAI's assumption that 25% of data revenues from wireless services in next year will be from 800 MHz band and no drop in tariff with launch of new 4G/3G services would only inflate reserve price.

**Q.9. What should be the ratio adopted between the reserve price for the auction and the valuation of the spectrum? Would it be optimal to fix reserve price equal to valuation of spectrum?**

- (i) The spectrum valuation should not be taken as the reserve price as theoretical valuation could be an over-estimation. This may lead to inefficient pricing and would impact consumer as spectrum cost is ultimately passed on to consumers.
- (ii) The Authority has earlier recommended that the reserve price for the forthcoming auction should be fixed at 80% of the average spectrum valuation. We suggest using same benchmarks for current auction.





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## Annexure I

Finalization of Revised Reserve Price for the Auction of Spectrum in 800 MHz band (CDMA) and Pricing of Spectrum for current spectrum holding in 800 MHz band(CDMA) by existing operators in the 800 MHz

The Union Cabinet today approved the following:

- (i) Finalisation of Revised Reserve Price for the Auction of Spectrum in 800 MHz band (CDMA) for all service areas, since no bids were received during auctions held in November, 2012
- (ii) Pricing of Spectrum for current spectrum holding in the 800 MHz band (CDMA) by existing operators in the 800 MHz band at the reserve price till auction discovered price is available.

After considering the recommendations of the Empowered Group of Ministers (EGoM), the Cabinet approved, among others, the following:

- (i) **Reserve price for 800 MHz band in all service areas be reduced by 50 percent from the previous reserve price as approved by the Cabinet in its meeting held on 3<sup>rd</sup> August, 2012;**
- (ii) As regards payment for spectrum currently held in 800 MHz band by existing operators in all service areas where auction determined price is not available, it has been decided that such operators be charged at the revised reserve price, w.e.f. 01.01.2013 on the applicable quantum of spectrum, till such time as auction determined price becomes available, and that after the auction price becomes available, the earlier payment made on the basis of reserve price would be adjusted against the amount actually due.

The above decisions are expected to result in further efficient utilisation of the scarce natural resource of spectrum facilitating proliferation of telecom services in the country.