



SSTL/Reg/TRAI/ 1409/365

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Telecom Regulatory Authority of India

Mahanagar Doorsanchar Bhawan

Jawahar Lal Nehru Marg (Old Minto Road)

New Delhi – 110 002

Subject: Response to TRAI Consultation Paper on 'Valuation and Reserve Price of Spectrum: Licences expiring in 2015-16' dated 7th August 2014

Dear Sir,

At the outset we appreciate and welcome the Authority's consultation paper on 'Valuation and Reserve Price of Spectrum: Licences expiring in 2015-16' dated 7th August 2014 at this juncture.

With reference to above please find enclosed our comments and point wise response to the consultation paper on 'Valuation and Reserve Price of Spectrum: Licences expiring in 2015-16' dated 7th August 2014.

We hope that the Authority will consider our views and comments enclosed while making the recommendations for Valuation and Reserve Price of Spectrum: Licences expiring in 2015-16.

Thanking you,

With Regards,

For Sistema Shyam TeleServices Limited

T Narasimhan

Dy. Chief Executive Officer

Enclosed: As above

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Valuation and Reserve Price of Spectrum: Licenses expiring in 2015–16

Sistema Shyam TeleServices Ltd (SSTL) welcomes the opportunity to respond to TRAI's consultation Paper on "Valuation and reserve Price of Spectrum: Licenses expiring in 2015-16".

Q.1. Please comment on the issue of making available additional spectrum in contiguous form (as discussed in para 2.5 and 2.13) in the 900 MHz and 1800 MHz band.

- (i) We support harmonization of 900 and 1800 MHz spectrum band for allocation in contiguous frequencies. TRAI has also recommended allocation of 800 MHz spectrum in contiguous frequencies which should be implemented at the earliest but it should not be at the cost of delay in auctioning of 800/900/1800 MHz spectrum bands auction as that is harming operators who are awaiting allocation of additional spectrum for upgradation of network to provide better quality of service to subscribers.

Harmonisation of Spectrum in Contiguous Blocks would lead to efficient Utilisation of Spectrum

- (ii) The current spectrum allocations in 800/900/1800 MHz bands is made over years and is non-harmonized. Non-contiguous allocations of spectrum results in spectrum wastage as additional guard band are being created between operators. The optimal use of spectrum can be achieved by harmonizing the spectrum and allocation in contiguous frequencies. The harmonization will ensure that there is minimum spectrum wastage on account of guard-bands. The channel allocation in contiguous frequencies would lead to cost optimization in network rollout and at the same time additional spectrum would be harvested within existing band for allocation through auction.

Harmonised and Contiguous Spectrum would lead to efficient utilization of spectrum, fetch higher Revenue for the Government and bring Societal benefits

- (iii) It is easily possible to carve out additional blocks of spectrum after harmonization and contiguous allocation of spectrum which can be made available for next auction. Thus with harmonization of spectrum, there would be efficient utilization of 800/900/1800 MHz spectrum band and would facilitate deployment of advanced technologies for next generation networks and has potential to generate additional revenues in the next auction.

Auction of spectrum should not be delayed for contiguous allocations

- (iv) Operators are at a stage where they plan to use the additional spectrum towards supporting the spurt in data services growth of around 20% quarter over quarter experienced since last



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one year. Any delay in auction especially 800 MHz spectrum would competitively harm operators as they have not been able to meet the growing demand for data services due to already delayed auctions.

In view of the above SSTL supports contiguous allocation of spectrum in 800 MHz, 900 MHz and 1800 MHz band but with a caveat that auctioning should not be delayed.

Q.2. Please comment whether only contiguous blocks of minimum 5 MHz spectrum should be put for auction.

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Q.3. What should be the block size to auction the spectrum in (a) 900 MHz band and (b) 1800 MHz band?

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Q.4. What should be the minimum quantum of spectrum in the 900 MHz and 1800 MHz band that (a) a new entrant and (b) an existing licensee should be required to bid for?

Spectrum should be auctioned in smaller sizes of 200 KHz so that existing operators are able to buy additional spectrum. The minimum spectrum that could be bought by new operator should be 5 MHz but existing operators may be permitted to buy smaller quantum of 600 KHz.

Q.5. Should the licensee whose licences are due for expiry in 2015 and 2016 be treated as an existing licensee or as a new entrant?

Licensees due for expiry in 2015 and 2016 should be treated as existing operator as they may also be holding spectrum bought in auction. Thus expiry of license should not be construed as new licensees. Further these licensees would like to keep mix inventory for 900MHz and 1800MHz for their coverage and capacity requirement.

In view of the above it is suggested that the licensees whose licenses are due to expure in 2015 and 2016 should be treated as existing licensees.

Q.6. Should the valuation exercise for 1800 MHz spectrum be undertaken afresh for all the 22 LSAs?

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Q.7. Should the prices revealed in the February 2014 auction for 1800 MHz spectrum auction be taken as the value of 1800 MHz spectrum for the forthcoming auction in the respective LSA? Would the response be different depending on whether the forthcoming auction is conducted within one year of completion of last round of auction of February 2014 or later?

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Q.8. If the prices revealed in the February 2014 auction for 1800 MHz spectrum are taken as the value of 1800 MHz for the forthcoming auction, would it be appropriate to index it for the time gap (even if this is less than one year) between the auction held in February 2014 and forthcoming auction? If yes, what rate should be adopted for the indexation?

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Q.9. What should be the criteria for defining a 'market clearing price'? Can the auction determined price be considered as market clearing price, when (i) the demand for spectrum is greater than the supply and when (ii) the demand is greater than or equal to the supply? Can the auction determined price be considered as the market discovered price?

- (i) The reserve price for 1800 MHz spectrum band in the previous auction held in February, 2014 was high as is evident from the fact that out of 22 LSAs, in 11 LSAs auction price was same as Reserve Price. The demand was even lower than the supply. Therefore, the realised price in these 11 LSAs was not a market clearing price and market could not discover the true price of spectrum.
- (ii) In 800 MHz band also the reserve price recommended by the TRAI is high as bids in earlier auction in March, 2013 were received for only 8 circles and in these circles also the realized price did not go beyond the reserve price. The comparison of realized price and market valuation as per the TRAI recommendations dated 22nd February, 2014 is given below:

Sr. No.	Service Area	800 MHz realized Price/MHz Mar.2013	800 MHz TRAI RP/MHz 22.Feb.2014	Increase in RP
1	DL	360.39	450.00	19.91%
2	GJ	116.92	212.00	44.85%
3	KT	171.66	199.00	13.74%
4	KL	33.96	69.00	50.78%
5	KO	59.14	101.00	41.45%
6	TN	159.17	247.00	35.56%
7	UW	55.86	93.00	39.94%
8	WB	13.43	46.00	70.80%

- (iii) In view of the above TRAI is requested to review the for 1800 MHz spectrum bands where market clearing price could not be achieved.

Q.10. Should the valuation of spectrum and determination of reserve price be done only for those LSAs where market clearing price was not achieved for 1800 MHz spectrum in February 2014 auction?

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Q.11. Should the auction determined price for LSAs where market clearing price was achieved in February 2014, be taken as equal to the value of spectrum?

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Q.12. Should the market determined price be taken as the value of spectrum in all LSAs?

Yes, Reserve price should be re-determined where market clearing price was not achieved. In other circles also the price revealed in the auction could be taken as value and **the reserve price for the ensuing auction should be fixed at 80% of the realized value.**

Q.13. Should the value of spectrum in the LSAs where market clearing price was not achieved be estimated by correlating the sale prices achieved in similar LSAs where market clearing price was achieved with known relevant variables (paragraph 3.19)? If yes, please suggest which single variable is best suited for this purpose?

Q.14. Can multiple regression analysis be gainfully employed for this purpose given the limited number of sample data points?

Q.15. Should the value of spectrum in 1800 MHz band be assessed on the basis of producer surplus on account of additional spectrum?

Q.16. Is there any need for a change/revision of any of the assumptions adopted by the Authority in producer surplus model in the Recommendations of September 2013? Justify with reasons.

Q.17. Should the production function model based on the assumption that spectrum and BTS are substitutable resources be used as a valuation approach (as was done in the earlier valuation exercise)? Please support your response with justification/calculations/relevant data and results.

Q.18. Should the revenue surplus approach be used to arrive at the value of 1800 MHz spectrum? Do you agree with the assumptions made?

Q.19. Should the values contained in the Report of 8th February 2011 for spectrum up to 6.2 MHz be incorporated after indexation in the calculation of the average value of the 1800 MHz spectrum in the current exercise?

Q.20. Should the prices revealed in the February 2014 auction for 1800 MHz spectrum auction be used as one of the values of 1800 MHz spectrum?

Q.21. Apart from the approaches discussed as above, is there any other approach for valuation of spectrum that you would suggest? Please support your answer with detailed data and methodology.



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Q.22. Would it be appropriate to value 1800 MHz spectrum as the simple mean of the values thrown up in all the approaches? If no, please suggest with justification that which single approach should be adopted to value 1800 MHz spectrum?

- (i) The DCF method based on reasonable and fair assumptions is best method for valuation of spectrum. DCF method takes into account, potential growth of revenue, possible changes in technologies, CAPEX and OPEX requirement, traffic growth, eco system like n availability of devices and infrastructure etc and therefore valuation is most realistic. Internationally the best practices for spectrum valuation are based on DCF method.
- (ii) Methods suggested above do not take into account most of the basic parameters for valuation. The methods like 'Producer Surplus' model and 'Production Function' models are based on technical value of the spectrum i.e. spectrum value is based on network related cost savings that can arise from access to spectrum for additional capacity and/or coverage purposes. Technical value alone is not sufficient to estimate the spectrum valuation. As submitted above commercial value is equally important for correct spectrum valuation.
- (iii) The incremental value of spectrum as in the case of Producer Surplus in terms of capacity enhancement would not give correct valuation. The ability of TSP to encash on additional capacity by offering better quality of service, new service etc is also important. Therefore spectrum valuation should be calculated on the basis of free cash flows over a long period of time.
- (iv) Similarly Multiple Regression models are statistical correlation models based on past observations. These models do not take into account parameters like quantum of spectrum available in a particular band, potential of deployment of new technologies, possible growth after deployment of new technologies. The valuation of 800/900 MHz as 1.5 times and 2 times the 1800 MHz price is linear regression relationship an are not independent models rather same models. Thus even regression models suggested in consultation paper are not accurate models for valuation.
- (v) The spectrum valuation should take into account the revenue gain that would arise from having access to spectrum and the likely revenue loss in not servicing the existing subscriber base in case of non award of spectrum . It may be noted that relative value of spectrum for established old GSM operators is different compared new operator as incumbents have established network, good share of market, higher ARPUs, better EBITDA margins etc. Thus advantages for an incumbent operator must be considered while deciding the spectrum value.
- (vi) Typically commercial value could arise in several ways: average revenue earned from customer, number of customers, changes in spending of customers by consuming new services or higher usage, greater retention of customers i.e. lower customer churn rates etc. 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. The differing commercial value of CDMA spectrum in 800 MHz and GSM spectrum in 900 MHz is one such example.

- (vii) As revenue earning capacity or commercial value of the spectrum especially for established operator has totally been ignored in 'Produce Surplus' model and 'Production Function' model, we do not support spectrum valuations on these models. The value of spectrum should also take into account the likely loss to the operator in the absence of such spectrum.
- (viii) Thus here are substantive errors in Producer Surplus, Production , regression models. Technical or correlation based statistical modeling 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. 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.
- (ix) As revenue earning capacity or commercial value of the spectrum especially for established operator has totally been ignored in 'Production Function' model, multiple regressions models and other models, we do not support spectrum valuations on basis of this model. **We suggest use of DCF for correct valuation of spectrum.**
- (x) In case TRAI feels that it should continue with the existing methodologies then we suggest that the auction determined price of February 2014 auction should be considered as the value of spectrum in 1800 MHz band for all 22 LSAs, and reserve price should be fixed at 80% of that value of the spectrum in 1800 MHz band for the forthcoming auction. There is need to reduce the reserve price as it was high in the previous auction. Out of 22 LSAs, the market determined price in auction in 11 LSAs auction price was same as Reserve Price i.e demand was even lower than the supply. Therefore, the realised price in these 11 LSAs was not a market clearing price and market could not discover the true price of spectrum. For efficient working of markets there s need to revise the reserve price. As per the suggested methodology the reserve price in 22 circles is suggested below:

S. No.	Service Area	Reserve Price per MHz (Feb'2014) (B)	Auction Price per MHz (Feb'2014)	Proposed Reserve Price per MHz (A)
1	Andhra Pradesh	163	163.0	130.4
2	Assam	7	36.1	28.9
3	Bihar	37	43.1	34.5
4	Tamilnadu	208	208.0	166.4
5	Delhi	219	364.0	291.2
6	Gujarat	143	237.8	190.2
7	Himachal Pradesh	6	6.0	4.8
8	Haryana	27	27.0	21.6

9	J&K	5	6.1	4.9
10	Karnataka	155	155.0	124.0
11	Kolkata	73	73.0	58.4
12	Kerala	52	52.0	41.6
13	Maharashtra	173	290.4	232.3
14	Madhya Pradesh	43	50.4	40.3
15	Mumbai	207	272.0	217.6
16	North East	7	7.0	5.6
17	Orissa	16	16.0	12.8
18	Punjab	54	54.0	43.2
19	Rajasthan	26	26.0	20.8
20	UP-East	61	64.0	51.2
21	UP-West	62	95.0	76.0
22	West Bengal	21	24.6	19.7
Total:		1765	2270.4	1816.3

(xi) In view of the above

- it is suggested that reserve price should be again estimated for 1800 MHz spectrum band as demand could not match supply of spectrum and therefore market clearing price could not be realized in 11 LSAs.
- Revised reserve price should be 80% of the realized price for spectrum in the previous 1800 MHz spectrum band.

Q.23. Should the value of 900 MHz spectrum be derived on the basis of the value of 1800 MHz spectrum using technical efficiency factors (1.5 times and 2 times) as discussed above?

Q.24. Should the economic efficiency approach as discussed above be used to calculate the premium for the 900 MHz spectrum, based on the additional CAPEX and OPEX that would be incurred on a shift from this band to the 1800 MHz band?

Q.25. Is there any other method that could be used for arriving at the valuation of the 900 MHz spectrum? Please support with detailed methodology.

Q.26. As in the case of the September 2013 Recommendations and adopting the same basic principle of equi-probability of occurrence of each valuation, should the average valuation of the 900 MHz spectrum be taken as the simple mean of the valuations obtained from the technical and economic efficiency approaches (and any other method)?



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- (i) TRAI has used 3 models based on technical factor (1.5 times and 2 times) and economic efficiency approach to calculate the premium for 900 MHz and 800 MHz spectrum bands. Past auctions have established that these models under estimate the 900 MHz valuation and over estimate the valuation for 800 MHz and 900 Mhz spectrum bands. The valuation estimated by TRAI and auction discovered prices have been compared in the table below:

Circle	TRAI Valuation of 900 MHz (9 th Sept, 2013)	Realized Price for 900 MHz band	Ration of realized price to TRAI valuation	TRAI valuation of 800 MHz (22 nd Feb 2014)	Realized Price for 800 MHz 1.25	Ration of realized value to TRAI Valuation	Ration of 900 MHz to 800 MHz
	900 MHz			800 MHz			
Delhi	359.65	740.96	2.06	562.78	360.39	0.64	2.05
Kolkata	125.27	194.63	1.55	126.87	59.14	0.46	2.11
Mumbai	327.50	563.09	1.71	440.16			

- (ii) Considering the huge variation in the spectrum valuation and the realized value for 800 MHz and 900 MHz spectrum bands, the TRAI methodology for valuation of spectrum is clearly flawed with respect to 800 MHz band as well as 900 MHz spectrum band. It may also be noted that the market realization for 900 MHz is more than 2 times the realized price for 800 MHz spectrum band. Thus the market value of 800 MHz band should be same as 1800 MHz band
- (iii) The relative market value of 1800 MHz and 900 MHz spectrum is available for 3 market where auction took place in February, 2014. In the table below it may be noted that the market price for 900 MHz is 2 times the market value of 1800 MHz spectrum band. Therefore the Reserve Price for 900 MHz can be 2 times the 1800 MHz spectrum band. It has been explained in the table above that the market value of 900 MHz band is also 2 times the value of 800 Mhz spectrum band. Thus the market value of 800 MHz band should be same as 1800 MHz band



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Circle	900 MHz –	1800 MHz-	Ratio between 900 & 1800 MHz
	Realised Price Per MHz Feb.2014		
Delhi	740.96	364	2.04
Mumbai	563.09	272	2.07

(iv) In the previous auction TRAI had decided that the reserve price for 900 MHz should be 1.65 times the 1800 MHz spectrum. This has encouraged operators to actively participate in the 900 MHz spectrum auction. Therefore TRAI may also consider to maintain the reserve price for 900 MHz spectrum band at 1.65 times the revised reserve price for 1800 MHz spectrum band.

(v) In view of the above it is suggested that:

- Reserve for 900 MHz band should be 1.65 time to 2 time the Reserve Price of 1800 MHz spectrum band.
- Reserve Price for 800 MHz and 1800 MHz spectrum band should be same.

Q.27. Should the reserve price of 1800 MHz spectrum in the forthcoming auction be fixed equal to the realized price of 1800 MHz spectrum in the February 2014 auction? If not, what should be the ratio between the reserve price for the auction and the valuation of the spectrum?

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Q.28. If the realized prices in the February 2014 auction for 1800 MHz spectrum is taken as the reserve price of 1800 MHz for forthcoming auction, would it be appropriate to index it for the time gap (even if less than one year) between the auction held in February 2014 and forthcoming auction? If yes, what rate should be adopted for the indexation?

- No, the reserve price of 1800 MHz spectrum band in the forthcoming auction should not be fixed at the realised price for 1800 MHz spectrum band .
- The reserve prices in the previous auctions were high as is evident from the fact that out of 22 LSAs, in 11 LSAs auction price was same as Reserve Price. The demand was even lower than the supply. Therefore, the realised price in these 11 LSAs was not a market clearing price and market could not discover the true price of spectrum. Therefore, the reserve price should be lowered further for correct realization of the market price.
- SSTL has suggested above that the Reserve price should be 80% of the market value realized for 1800 MHz spectrum band in the previous auction held in February, 2014.
