Dy. Advisor (MN)
Telecom Regulatory Authority of India
A2/14, Safdarjung Enclave,
New Delhi – 110029

Dated 15th July, 2004.

Subject : Consultation Paper No 11/ 2004 on Spectrum Related Issues.

Dear Sir,

Thank you for bringing such an exhaustive paper on a very complicated issue. We are enclosing herewith our point wise reply and have highlighted some of the major concerns dwelt in this paper.

1. TRAI while bringing out this paper has not considered the shift in the calling pattern of the subscribers. Presently almost 60 to 70% of the calls originate or terminate when the subscriber is inside the building. This has necessitated a change in the network topology, bringing about change in the requirement and needs of spectrum.

2 TRAI has asked the operators for their requirements for the next five year's time. Our operating team is currently working on this, and we would require some more additional time for submitting the same. However looking at the wireless growth of Indian Telecom, we expect that in Rajasthan, would have more than three million CDMA subscribers by 2009, and Shyam would have more than a million wireless CDMA subscribers. To serve the needs of the subscribers efficiently, it would be essential to have spectrum of more than 10 Mhz.

3. 1880 –1900 Mhz band of spectrum should be reserved exclusively for Indigenous Cor - DECT technology. It may be brought to your notice that while designing this product, a lot of discussions were held with WPC, and only based on inputs from WPC, the design was freezed on this spectrum. Further the product is based on ITU specifications, and in line with the goals set by both NTP, 95 & NTP 99, giving flip to indigenous designing and manufacturing.

4. Since TRAI is undertaking the task of contiguous spectrum allocation, it would be fair that spectrum is allocated on equitable basis to all operators. In the case of GSM, TRAI could consider allocation of totally 10+ 10 Mhz consisting or 5 + 5 Mhz of spectrum in 900 and 1800 band to all operators including both old and new. This would ensure fair play, and abundance of spectrum to all.

5 Further while doing so, and keeping room for the guard band, TRAI may consider allocating small bandwidth for Rural Mobile systems & wireless PBX for enterprises. This would also ensure effective utilization of spectrum, since the in-building subscribers would be served through in building resources. This would mean that subscribers on the road are being served through umbrella coverage and once the subscriber is inside the building, he is being serviced through indoor resources.

We do hope that the above is in order. Thanking you and assuring you of our best services.

Yours faithfully
for Shyam Telelink Ltd

T.Narasimhan
President – Corp. Affairs.

Issues for consultation

Chapter 2 Current spectrum availability and requirement

(i) **Should the 450 MHz or any other band be utilised particularly to meet the spectrum requirement of service providers using CDMA technology?**

The amount of spectrum available at 450 MHz as specified in the CDMA2000 standard is slightly less than 2 x 5 MHz, which would not enable all operators to receive sufficient spectrum in this band. Therefore it is recommended that the 450 MHz band be considered as a compliment for the 1900 MHz PCS band for operators who request to use this band particularly in rural and hard to serve areas. This band should not be considered as a substitute for the 1900 MHz PCS band, however should be treated as complimentary to the 1900 MHz band.

(ii) The consultation paper has discussed ITU method for assessment of spectrum requirement. Based upon the methodology submit your requirement of spectrum for next 5 years. While calculating the required spectrum, please give various assumptions and its basis.

Shall be provided in due course. However looking at the wireless growth of Indian Telecom, we expect that in Rajasthan, would have more than three million CDMA subscribers by 2009, and Shyam would have more than a million wireless CDMA subscribers. To serve the needs of the subscribers efficiently, it would be essential to have spectrum of more than 10 Mhz.

(iii) **Whether IMT 2000 band should be expanded to cover whole or part of 1710 – 1785 MHz band paired with 1805 – 1880 MHz?**

At present there are no commercially available CDMA 2000 equipment in this band as Europe has long restricted this band to provide GSM services. However ITU has identified this band, for introduction of IMT 2000, we have no objection if this band is expanded to cover IMT 2000 services.

(iv) Should IMT 2000 spectrum be considered as extension of 2G mobile services and be treated in the same manner as 2G or should it be considered separately and provided to operators only for providing IMT 2000 services?

ITU has identified several bands for IMT-2000 and outlined a variety of specific band pairings for IMT-2000 under ITU-R Recommendation 1036-2.[1] In fact, all bands currently used by mobile providers in India have been identified by the ITU in Radio Regulation Footnotes 5.388 5.317A, and 5.384A for possible use by IMT-2000 systems. Therefore IMT 2000 may be considered as extension of 2G mobile services

With the migration to Unified Access regime, and technology and service neutral regulations, operators should be allowed to migrate to IMT-2000 systems in their existing bands and offer a variety of services not specific to 2G or 3G technologies. Further the PCS and UMTS bands also be made available to operators for the provision of advanced wireless services in a service and technology neutral manner.

(v) Reorganisation of spot frequencies allotted to various service providers so as to ensure the availability of contiguous frequency band is desirable feature for efficient utilisation of spectrum. Please suggest the ways and means to achieve it.

Considering the long term perspective we urge TRAI to move towards contiguous spectrum allocations for operators for the reasons outlined in the Consultation Paper. This could be achieved through setting up of a task force to prepare a document and implement in a time bound manner the following action plan.

- Vacating of spectrum by non telecom service providers.
- Harmonization of carrier assignments (specially for CDMA) which are currently in non-standardised channeling plans.

In case of microcellular WLL systems based on TDD access techniques, efficient and optimum utilization is assured by sharing of the entire band of 20 MHZ (1880-1900 MHz) by multiple operators. One carrier per operator can be fixed exclusively for the respective operator to ensure compliance to GOS while remaining being shared by all.

vi) Whether the band 1880 – 1900 MHz be made technology neutral for all BSOs / CMSPs / UASLs and be made available with the pair 1970 – 1990 MHz or should it be kept technology neutral but reserved for TDD operations only.

This band should be exclusively meant for indigenously developed Cor DECT technology. It may be brought to your notice that while designing this product, discussions were held with WPC, and only based on inputs from WPC, the design was freezed on this spectrum.*Presently CorDect is being used extensively by BSNL, Reliance, SHYAM & HFCL in large volumes all over country. (BSNL is installing about 1 Million lines of CorDect in 1880 – 1900 Mhz band. , it is impractical to look for a any change inthis regard. .*

Further Given the exiting allotment of the 1880-1900MHz band for "microcellular WLL systems based on TDD access techniques, especially indigenously developed technologies, capable of co-existence with multiple operators in the frequency band 1880-1900 MHz on a case-by-case basis"

As per IND 49 of NFAP and the fact that some service providers are using this band to provide fixed wireless services of voice and data connectivity, this allotment be left un-touched.

This allocation is already technology neutral, except that it specifically encourages the use of indigenous technologies by way of giving a fillip to technology development in India.

In any spectrum allocation, even while being technology neutral, it is imperative to specify

- *the duplex type (here, TDD),*
- *method of sharing spectrum among operators (here, co-existence),*
- *channelisation (none, consistent with co-existence criterion), and*
- *emission characteristics (here, specified in qualitative terms as "micro-cellular").*

Thus, the allocation is already as technology neutral as possible in spectrum allocation. There is no need for any changes in the allocation of this band and should be reserved exclusively for TDD operations only.

In the light of the above the band 1880 –1900 should be reserved exclusively for Indigenously developed CorDect (which is as per the ***ITU standard*** *) and sold worldwide. This will be in line with NTP 95 & NTP 99 & the commitments made by previous & present Govt.*

Chapter 3 : Technical efficiency of spectrum utilisation

(vii) Please offer your comments on the methodology outlined in this Chapter for determining the efficient utilisation of spectrum. Also provide your comments, if any, on the assumptions made.

No comments on the methodology outlined. However TRAI to ensue that technology neutral and service neutral stand. Service provider should have the freedom and flexibility to select the technology that makes the best commercial sense without interference from any sector. TRAI to ensure that all service providers are treated identically and identical benefits are available to all.

(viii) Please provide your perception of the likely use of data services on cellular mobile systems and its likely impact on the required spectrum including the timeframe when such requirements would develop?

Presently Indian market is dominated by voice. However seeing the emergence of data services in countries like Korea, Japan and some other Asian countries, we should also gear ourselves for the data services. This would take at least five years before the data revenues come up to some respectable levels. The primary movers for data services are the predominance of content providers. In India in spite of our dominance in software we are unable to come up with number of Content providers. One very important factor for consideration is our literacy levels, and diversified linguistic pattern.

Data services require additional spectrum and revised network planning. ITU has defined several paths for both GSM and CDMA, which both migrate at a common level. The requirements of spectrum in data services are different both at block levels and in totality. This would require another consultation paper, after ascertaining inputs from content providers.

Chapter 4: Spectrum Pricing

(ix) Is there a necessity to change from the existing revenue share method for determining the annual spectrum charge?

Yes. The spectrum charges upto 10 Mhz should be based on cost and beyond 10 Mhz should be based on AIP for all old operators. There should not be any additional entry fee for the old operators.

New operators should pay one time entry fee equivalent to the old operators, and for spectrum charges as recommended above.

If yes, what methodology should be used to determine spectrum pricing for existing and new operators? (Please refer table in Section 4.8)

As enumerated above

In the event AIP is adopted as a means to price spectrum, would it be fair to choose GSM as a reference for determining the spectrum price?

AIP should only be adopted beyond 10 Mhz of spectrum. However it would be fair to choose GSM as a reference for determining the spectrum price.

Please provide your comments on the assumptions used in A.I.P.

No comments

In case Auction methodology is used for pricing the spectrum, please give suggestions to ensure that spectrum pricing does not become very high and spectrum is available to those who need it.

Beauty parade combined with Multi layer auction would ensure the above result.

Should the new pricing methodology, if adopted, be applicable for the entire spectrum or should we continue with revenue share mechanism till 10 + 10 MHz, and apply the new method only for spectrum beyond this?

New pricing methodology as enumerated in our reply for some of the above questions should be adopted with immediate effect upto 10 Mhz. of spectrum. Beyond 10 + 10 Mhz of s n requirement AIP method should be adopted.

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What incentives be introduced through pricing to encourage rural coverage and / or using alternative frequency bands like 450 MHz?

Connectivity to rural areas through this route has the following disadvantages.

Higher cost of Infrastructure equipment
Higher cost of terminals
Higher backhaul cost.

TRAI to ensure that the above costs are fully compensated for encouraging operators to go to rural areas using 450 Mhz of spectrum.

TRAI may consider allocation to small operators covering exclusively rural areas at a throw away price.

Does M X C X W formulae for fixed wireless spectrum pricing need a revision? If so, suggest the values for M, C, W?

The wireless spectrum formula needs change for UASLs. We recommend that fixed wireless spectrum pricing be revised and should be the same as is adopted for GSM cellular operators now.

The present rate of 0.25% of AGR for bandwidth of 112 MHz for the Circle and 224 MHz for the Metro may be retained. Additional spectrum of 28 MHz for the Circle and 56 MHz for the Metro may be charged at 0.05% of AGR.

In view of this, the formulae M X C X W is no longer valid.

This should be effective from date of migration of BSOs to UASL.

In addition we would also like to bring the facts to notice regard disparity in frequency spots allocation as follows with our views:

UASLs who apply for microwave links are allocated frequency spots on town-wise basis for a particular circle whereas CMSPs are allocated the frequency spot for the entire circle and need not take permissions for each and every town where service is being commissioned. In the light of migration to UASL regime, UASLs should also be allocated frequency spots for the entire circle as is being given to CMSPs instead of town-wise allocations. This will reduce and simplify the procedures and UASLs would not have to file applications for various towns as they rollout their network but would get one allocation for the entire circle.

(xvii) Should there be different pricing levels for shared spectrum versus spectrum that is allocated with protection? How should this be determined?

Yes. Shared spectrum should cost less. This should be based on usage by one/ two/ multiple operators and the reserves kept for the future. Operators should only be charged for the spectrum allocated and not for the reserve spectrum

Chapter 5 Spectrum allocation

How much minimum spectrum (refer approach (I) and (II)) in section 5.4) should each existing operator be provided? Give the basis for your comments.

To meet the teledensity targets laid down by the Government, service providers should have access to a minimum amount of 2 x 5 MHz of spectrum initially. This would enable operators to plan a reliable network. The spectrum allocation has a direct impact on the quality and efficiency of the network. This would also enable operators to keep the overall network cost per subscriber down and offer affordable services. Further, the back haul and business support systems are underutilized if adequate spectrums are not provided.

Inadequate spectrum may lead to quality & cost issues. TRAI should also ensure that larger blocks of spectrums are provided offering flexibility to provide services. In an Unified Access regime which is technology neutral it is imperative that both GSM and CDMA operators are provided with the same amount of spectrum.

At what stage the amount of spectrum allocation to new entrants be considered in the 800 MHz / 900 MHz / 1800 MHz frequency bands?

Allocation to new entrants should be considered in the 800 MHz / 900 MHz / 1800 MHz frequency bands only after the existing operators have been awarded 2 x 10 MHz. If there is inadequate spectrum available to meet the requirement of existing operators, new bands should be opened.

Should spectrum be allocated in a service and technology neutral manner?

Spectrum should be allocated in a service neutral and technology neutral manner. This would enable operators to choose which technology(ies) to use and which services to provide over their spectrum bringing substantial social and economic benefits. Service and technology neutrality is of the utmost importance to allow for the development of innovative applications, more efficient technologies, consumer choice, lower prices, and competition. Part of technology neutrality as it pertains to spectrum allocation is licensing frequency bands that encourage multiple technology standards to compete.

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What should be the amount of cap on the spectrum assigned to each operator?

Yes. There should be cap of 15+ 15 Mhz of spectrum and also incentives/ disincentives for the use of spectrum assigned. . This would ensure that some operators do not block the spectrum.

(xxii) What procedure for spectrum allocation be adopted for areas where there is no scarcity and in areas where there is scarcity?

TRAI should devise a method designed with the intent to promote competition in the market place, encourage the efficient use of spectrum to maximize its use, and to increase access to voice and data services keeping in mind the cost of providing the service. Most importantly, the procedure must provide a fair opportunity for service providers to acquire the appropriate spectrum needed to meet the needs of their customers and serve the public.

Which competitive spectrum allocation procedure (Auction / Beauty Contest) be adopted in cases where there are scarcity?

If there is scarcity of spectrum, then beauty parade combined with multi layer auction would ensure competitive bidding.

Should we consider giving some spectrum in 900 MHz band to fourth CMSPs?

Since TRAI is undertaking the task of contiguous spectrum allocation, it would be fair that spectrum be allocated on equitable basis to all operators. In the case of GSM, TRAI could consider allocation of totally 10+ 10 Mhz consisting of 5 + 5 Mhz of spectrum in 900 and 1800 band to all operators including both old and new. This would ensure fair play, and abundance of spectrum to all. As per the present situation, there is not much of a pressure for spectrum in small towns and tehsils and therefore allocating 900 MHz of spectrum to fourth CMSP should be strongly considered.

Comments of stakeholders are invited on the minimum blocks such as 2 X 2.5 MHz / 2 X 5 MHz of additional spectrum to be allocated to existing service providers in situations where IMT 2000 band is opened as well as in situation where it is not opened. Additionally, comments are also invited on the minimum allocation to new entrants.

Additional spectrum for existing operators to be allocated in minimum blocks of 2 x 5 MHz. Larger blocks of contiguous spectrum provide operators with additional capacity, the ability to plan for long-term growth and greater flexibility to offer a variety of voice and data services. International practice tends to support the allocation of paired spectrum blocks of 5/ 10 / 15 Mhz. Of spe

(xxvi) In the event that IMT 2000 spectrum is treated as continuum to 2G, should existing operators using spectrum below the specified benchmark be treated as those eligible for IMT 2000 spectrum?

All operators should have access to 2 x 10 MHz of spectrum, irrespective of the number of subscribers they have or the technology utilized. As mentioned in the previous paragraphs IMT-2000 systems can be deployed in any band and multiple bands have been identified for IMT-2000 systems. TRAI should consider a number of different frequency pairing band options and design a fair assignment process that would meet the needs of operators to receive the spectrum they require to offer a variety of voice and data services, including broadband data access.

Chapter 6 Re-farming, Spectrum trading, M&A and Surrender

Re-farming of spectrum

What approach should be adopted to expedite the re-farming of 1800 MHz and IMT-2000 spectrum from existing users?

The Government should immediately give notice for cancellation of the spectrum and allocate alternate suitable spectrum for the user. Further Government should adequately compensate the present user to the extent of procuring new equipments in the new bands.

What approach should be adopted for re-farming of spectrum after expiry of license?

After expiry of the license, the Government after giving adequate notice can withdraw the license from the present user.

Surrender of spectrum

Should there be any refund for spectrum surrender in principle?

The spectrums in India have been allocated to operators on twin basis.

Through bidding process, to all the CMSP licenses (first, second and fourth) and the first six BSOs.
Through beauty parade to the later entrant BSOs.
In case of surrender of spectrum refund of spectrum cannot be uniform, as the difference in the license fee paid are not identical. As the operators had considered the spectrum while bidding therefore TRAI to devise a method for the same.

Should there be refund for spectrum surrender consequent to Unified Access license policy? If yes, what should be the basis?

For post NTP, 99 operators who came without bidding process and operators coming up post Unification regime, there is no need to refund in case of surrender of spectrum. TRAI in its reply to DOT, has recommended that spectrum be given to

these operators free of cost. Therefore the question of refund on surrender does not arise.

(xxxi) How should the amount of refund be estimated?

Based on pro-rata basis on the remaining license period.

Spectrum trading

Should we open up the spectrum market for spectrum trading? If yes, what should be the time frame for doing so?

To be considered at a later stage as Indian market is not so mature.

(xxxiii) What are the pre-requisites to adopting spectrum trading?

Same above.

Mergers & Acquisitions

Whether we should specify a cap higher than 2 X 15 MHz for Metros and Category “A” service area and 2 X 12.4 MHz for Category ”B” and “C” service area in case of M&As or should it be retained?

TRAI may consider this move, as this is reasonable and justified. However TRAI to protect-- the competitive conditions of the market. Choice should be available to customers.

(xxxv) In case, IMT 2000 is considered as a continuum of 2G Services, is there a need to have a cap higher than that without IMT 2000 services? Should there be individual

caps on 2G and 3G spectrum or a combined cap?

As the 3 G services would be offered in the 2G spectrum, TRAI may only think of a combined cap of 15 MHz for 2G & 3 G services, in case of mergers/ acquisitions.

In case of M&As where the merged entity gets spectrum exceeding the spectrum cap, what should be the time frame in which the service provider be required to surrender the additional spectrum?

A reasonable time frame of 12 months should be given to a service provider to re deploy the network.