

Annexure A

Idea Cellular's Response to TRAI's Consultation on 'Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers' dated 28^h Mar,2014

Preliminary Submissions:

1. The NTP 2012 in its section on Strategies - Broadband, Rural Telephony and Universal Service Obligations Fund (USOF) and under point number 1.11 states, "To ensure availability of adequate spectrum to meet current and future demand for microwave access / backhaul, in appropriate frequency bands".
2. Against the NTP's focus on Microwave, Idea Cellular compliments the Authority for bringing out a detailed consultation paper on the twin issues of "Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers".
3. Idea Cellular submits that timely and adequate allocation of microwave access and backbone spectrum is critical to faster and comprehensive telecom rollouts across the country. Thus the policy on allocation and charging of MW spots has to ensure adequate timely allocations to operators for swifter roll-outs while also ensuring that the Government gets reasonable revenue from use of microwave spectrum, without allowing the charging for MW spots becoming a revenue enhancement exercise. The lack of critical wire line infrastructure structure for connecting the towers makes the need or microwave an essential resource for network roll out.
4. In this regard, Idea Cellular feels that the DoT orders on "Spectrum charges for microwave access and backbone networks of cellular networks" dated 18.04.2002 comprehensively covered all issues pertaining to allocation of number of MW spots, additional allocation aspects and spectrum charging, etc.
5. **The DoT order of 18.04.2002 established the principle of providing basic spectrum i.e. at least 2 pairs of MW access spots in circles / 4 pairs in metros, and one pair of MW backbone spots that are essential for the roll out of any telecom network. Further the policy also rightly specified the charges to be levied towards allocation of the same.** It also highlighted the aspect of allocation of spots based on justification and technical analysis as and when the demand arose for allocation of additional MW resources. The charging mechanism as laid out under the said DoT Order was as follows :

Microwave Access

Service Area Type / Spectrum Charges	Circle	Metros
@ 0.25% of AGR per Annum	Spectrum Bandwidth upto 112 MHz. With 28 MHz BW per spot, this translates to 2 spots.	Spectrum Bandwidth upto 224 MHz. With 28 MHz BW per spot, this translates to 4 spots.
Additional @ 0.05% of AGR per Annum	Every additional 28 MHz or part thereof (if justified and assigned).	

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Microwave Backbone

Service Area Type / Spectrum Charges	Circle / Metros
@ 0.10% of AGR per Annum	Spectrum Bandwidth upto 56 MHz With 28 MHz BW per spot, this translates to 1 spot.
Additional @ 0.05% of AGR per Annum	Every additional 28 MHz or part thereof (if justified and assigned)

6. **Idea Cellular believes that the above-mentioned structure was a most appropriate and reasonable manner of ensuring allocation and charging for microwave spectrum. The charging model while being simple also took into account the scope for future revenue escalation basis the growth in operator's AGR.** As an example the charges paid by Idea Cellular over the last 3 years are summarized as below :

Financial Year	Amount (Rs in Crs)
2011-12	70.58
2012-13	78.12
2013-14	95.08

7. Most importantly, the Order pegged the charges at a reasonable level while striking a fine balance between the Government revenues and the operator needs. The fact that the policy has continued to be in vogue since 2002, albeit with the intervention of the TDSAT, itself speaks of its robustness and ability to account for the changes and challenges that came in with the passage of time.
8. **However, subsequent DoT orders of 2006, unjustly aimed at converting the microwave allocation into a revenue enhancement exercise**, supposedly to encourage efficient usage. This in our submission was erroneous, and the Authority needs to reconsider the DoT action based on actual revenue generation on account of microwave charges over the last few years and also consider a mechanism to ensure efficient usage. So while, the allocation of carriers has been covered in no. of spots, the escalation provided in 2006 rates beyond the first pair of carriers is totally unjustified in 2006 policy.
9. **You may also note that Ld. TDSAT has already quashed the 2006/2008 policy and as on today 2002 policy is the only applicable policy.** It is thus most surprising that DoT/ WPC is insisting of 2006 policy even in 2010 and thereafter (as seen in agreement signed in 2010). **Firstly the 2006 policy was without an specific recommendation of TRAI and secondly when the 2006 policy itself has been quashed , then the DoT/ WPC should not unnecessarily burden the Industry with additional costs.** The TRAI needs to make a specific recommendation that DoT should desist from arbitrarily imposing any policy which is without TRAI recommendations and leads to additional burden on the Industry.
10. It is also pertinent to point out that the access providers in the Indian telecom sector are already reeling under huge debts and progressively declining returns. In its own Study Paper Number 50/2013 on "Shareholding Pattern, Financing Pattern and Capital Structure of Indian Private Telecom Access Service Providers" dated the 19th Nov 2013, TRAI has acknowledged that after their initial success, Indian telecom companies are confronted today with serious growth challenges and the sector is characterized by mounting competition, declining average revenue per user (ARPU) and rising costs that have put tremendous pressure on operating margins. It is thus clear that any cost escalations by way of MWA or MWB spectrum charges

Public

will put additional stress on the operator margins which will not be in the interest of the sector and its consumers.

11. As the regulator has pointed out in the consultation paper there are very few countries in which the auction method is followed, and in our view, the “administrative allocation” is the appropriate method to be followed. **Further, auction method would create huge amount of uncertainty for any operator bidding for “Access Spectrum” in future as he would not be assured of Microwave carrier allocation. In our view, there should be an agreed entitlement of spots linked to winning of “Access Spectrum”.** It is submitted that it is not possible for any operator to launch mobile services without any MW spectrum. Thus for any Access spectrum winner in any auction a certain amount of MW spots should be automatically allocated on an administrative basis.
12. Further, currently, only 810 spots have been allocated against 2090 spots available and there is plenty of availability of the same with the Government. It would thus not be feasible to have an auction mechanism when the supply is already much more than the demand.
13. We also submit that currently, the Government collects MWA/MWB charges based on the revenues generated by a telecom operator. This leads to inefficient utilization of MWA/MWB as less efficient operators will have lower payouts obligations and efficient operators will pay more. There is a need to thus devise a mechanism which would act as a deterrent to inefficient utilization or hoarding of a national resource like this.
14. One mechanism can be to prescribe a “presumptive AGR” as minimum charges to be paid. This would lead to demand for additional carriers from only those operators who would be able to utilize these carriers effectively to generate enough revenue. The minimum charges should be adequate enough to deter any person from just holding on to the carriers and not undertaking any operations or generating any revenue from the allocated MW spots.
15. **In view of the above, our summary submissions on TRAI consultation are as follows :**
 - a. **You would also note that the issue of microwave spectrum charging is currently sub judice. It is submitted that the charges for existing allocations and thereby the allocations themselves, are protected by the Judgment of the Ld. TDSAT that set aside the DoT Orders dated November 2006 and November 2008 in its Order dated 22 Apr-2010 in Petition No.122 of 2007. Although the DoT has challenged this Order before the Hon’ble Supreme Court, the DoT had filed Civil Appeal (D) No. 29714 of 2010 against the orders of TDSAT at Supreme Court. Though the Court has admitted the matter, it has not granted any stay to DoT.**
 - b. **Idea Cellular submits that the preferred basis of assignment of MWA/MWB carriers to the TSPs should be “exclusive assignment” and the same should be assigned “administratively”.**
 - c. **The microwave allocation and charging mechanism should conform to the DoT order of 18.04.2002. The Order pegged the charges at a reasonable level while striking a fine balance between the Government revenues and operator needs. The fact that the policy has continued to be in vogue since 2002, albeit with the intervention of the TDSAT, itself speaks of its robustness and ability to account for the changes and challenges that came in with the passage of time.**

- d. It is critical that the MW allocation policy provides for continuity of spots for existing operators so that the expansion of networks is not hindered due to the lack of MW spots.
- e. It is also submitted that any further allocations post the initial MW allocations should be based on real traffic build up and justified based on technical requirements such as metro operations, population density, number of BTS / hops deployed, etc.
- f. To ensure efficient usage of microwave spectrum, the Authority can consider a “presumptive AGR” as minimum charges to be paid by an operator. This would lead to demand for additional carriers from only the operators who would utilize these carriers effectively to generate enough revenue.
- g. Idea Cellular submits that there is a need to treat all access spectrum bands similarly when considering allocation of MW spectrum as all technologies like 3G and 4G/ LTE/ BWA services can be rolled out in 900 / 1800 /2100/ 2300 MHz. Hence the allocation of MW spots should be based on capacity requirements for the technology being adopted by an operator irrespective of the band. Every operator has to inform the DoT about the technology that they want to launch on any access band and the quantum of MW spots to be allocated administratively should be based on the technology being used by the operator. Eg. A winner of 900 or 1800 MHz in the recent auction may deploy 3G or LTE/4G on these bands and so DoT should not consider these bands as 2G bands for allocation of MW spots.
- h. In this regard, we are not in agreement with the DoT committee report of December 2010. Firstly no consultation was undertaken with the stakeholders by this committee and secondly the basis of allocation of spots has to be the capacity required for backhaul (as highlighted in para ‘g’ above). . However the report does not take into the capacity backhaul requirement for 3G , while it addresses the issue for BWA. Thus in our submission the DoT committee report of December 2010 is biased and not a complete understanding of the situation. Policy direction needs to be guided by technical principles rather than bias for any specific technology. Thus in our submission the indicative spots allocation should be as follows :

Service	Metro/ A Circle	B/ C Circle
2G only	4	3
3G only	5	4
BWA only	6	5
2G + 3G only	6	5
2G + BWA only	7	6
2G+3G+ BWA only	8	6

- i. Idea Cellular would like to reiterate that any allocation of spots should be on an AGR basis only. Link by link charging would make the whole exercise of calculation complex and query prone. Since the payment is on AGR basis, the allocation of spots should be on “exclusive basis”.

- j. Also the allocation of MW spots should be for the entire Service area and not for partial Service areas as has been done so far in many cases.

Our detailed query wise response is as under :

Q1. How many total Microwave Access and Backbone (MWA/MWB) carriers should be assigned to a TSP deploying:

- a. 2G technology only -
 - b. 3G technology only.
 - c. BWA technology only.
 - d. Both 2G and 3G technologies.
 - e. 2G and BWA technologies.
 - f. 2G, 3G and BWA technologies.
- Please give rationale & justification for your answer.**

Idea Cellular’s Response:

At the outset, the calculation of number of frequency spots depends on five key parameters - Capacity requirement, Fiber availability, Network Geography (Terrain, area), Threshold degradation and equipment deployed in network – For E.g., modern Hops can support from 1024/4096 QAM whereas legacy equipment’s can support only CQPSK.

The capacity requirement would depend on the Access technology and the number of Carriers being used for MBB. An Operator using 2 carriers of 5 MHz (irrespective of the band) for 3G would require higher number of MWA carriers as compared to an Operator using a single carrier for 3G. This is because the bandwidth required depends on the throughput, which in turn depends on the number of carriers used for MBB Services.

Essentially, planning out the requirement for microwave spots is a fairly complex exercise that involves interplay of various technical and locational factors and putting a simple number to the same would be difficult. Please find enclosed Annexure B highlighting the point to point access network design guidelines. However, on an indicative basis, the number of recommended carriers may be taken as follows:

Service	Metro/ A Circle	B/ C Circle
2G only	4	3
3G only	5	4
BWA only	6	5
2G + 3G only	6	5
2G + BWA only	7	6
2G+3G+ BWA only	8	6

We further submit that there is a need to treat all access spectrum bands similarly when considering allocation of MW spectrum as all technologies like 3G and 4G/ LTE/ BWA services can also be rolled out in 900 / 1800 /2100/ 2300 MHz. Hence the allocation of MW spots should be based on the capacity required for the technology being adopted by an operator irrespective of the band. Every operator has to inform the DoT about the technology that they want to launch on any access band and the quantum of MW spots to be allocated administratively should be based on the technology being used by the operator. Eg. A winner of 900 or 1800 MHz in the recent auction may deploy 3G or LTE/4G on these bands and so DoT should not consider these bands as 2G bands for allocation of MW spots.

In this regard, we are not in agreement with the DoT committee report of December 2010. Firstly no consultation was undertaken with the stakeholders by this committee and secondly the basis of allocation of spots has to be the capacity required for backhaul (as highlighted in above para). However the report does not take into the capacity backhaul requirement for 3G , while it addresses the issue for BWA. Thus in our submission the DoT committee report of December 2010 is biased and not a complete understanding of the situation. Policy direction needs to be guided by technical principles rather than bias for any specific technology.

Q2. How many MWA/MWB carriers need to be assigned to TSPs in case of 2G, 3G and BWA at the start of their services[i.e. at beginning of rolling of services] Please justify your answer.

Idea Cellular’s Response:

The DoT order of 18.04.2002 established the principle of providing basic spectrum i.e. at least 2 pairs of microwave access spots in circles / 4 pairs in metros and one pair of microwave backbone spots that are essential for the roll out of any telecom network. The allocation of spots based on justification and technical analysis was also highlighted as and when need arose for allocation of additional MW resources.

Hence, our recommendation with respect to the number of MWA/MWB Carriers at start of services is as follows:

At start of the network services:

	Metro / A Circle	B/C Circle
Number of Carriers	4	3
Backbone	1	1

Further, once the rollout has been completed and additional rollouts are carried out, additional access frequency spots should be assigned based on justification by Operators.

Q3. Should excess spectrum be withdrawn from existing TSPs?

Q4. If yes, what should be the criteria for withdrawal of excess allocation of MWA and MWB carriers, if any, allocated to the existing service providers?

Idea Cellular’s Response:

Idea Cellular does not favor withdrawal of spectrum from existing TSPs. It is submitted that all existing allocations of microwave have been done as per prevailing 2002 guidelines and that equipment is currently deployed against the spectrum available in the existing network. Hence any withdrawals from the existing allocations will require re-tuning equipment to desired sub band or changing equipment, all of which will result in huge cost impact while also requiring expending extensive effort and time.

Q5. What should be the preferred basis of assignment of MWA/MWB carriers to the TSPs i.e. 'exclusive basis assignment' or 'link-to-link based assignment'?

Q6. In case, "exclusive basis" assignment is preferred, whether MWA and MWB carriers should be assigned administratively or through auction. Please comment with full justifications.

Q7. In case 'link-to-link basis' assignment is preferred, how the carrier assignment for different links should be carried out, particularly in nearby locations?

Idea Cellular's Response:

As the Regulator has pointed out in the consultation paper there are very few countries in which the auction method is followed, in our view, the "administrative allocation" is the appropriate method to be followed. Further, auction method would create huge amount of uncertainty for any operator bidding for "Access Spectrum" in future as he would not be assured of MW carrier allocation. MW carriers are essential for any Operator to launch Mobile Services and a certain amount of MW Access and Backbone spectrum should be allocated administratively to all Access spectrum winners in auction. In our view, there should be an agreed entitlement of spots linked to winning of "Access Spectrum".

Further, currently, only 810 spots have been allocated against 2090 spots and there is plenty of availability of the same with the Government. It would not be feasible to have an auction mechanism when supply is already much more than the demand.

We also submit that currently, the Government collects MWA/MWB charges based on the revenues generated by a telecom operator. This leads to inefficient utilization of MWA/MWB as less efficient operators will have lower payouts obligations and efficient operators will pay more. There is a need to thus devise a mechanism which would act as a deterrent to inefficient utilization or hoarding of a national resource like this.

One mechanism can be to prescribe a "presumptive AGR" as minimum charges to be paid. This would lead to demand for additional carriers from only those operators who would be able to utilize these carriers effectively to generate enough revenue. The minimum charges should be adequate enough to deter any person from just holding on to the carriers and not undertaking any operations or generating any revenue from the allocated MW spots.

The preferred basis of assignment of MWA/MWB carriers to the TSPs should be based on "exclusive assignment" and should be assigned "administratively". "Exclusive Basis Assignment" is essential as it would not be possible to carry out the link by link coordination by WPC considering the huge number of MW hops deployed e.g. Idea would have over 4200 MW hops deployed in a city like Delhi and the deployment keeps changing rapidly as sites get added into the NW on a regular basis. Only if the allocation is on exclusive basis, it is possible for an Operator to manage and properly control link engineering and Interference at the individual TSP level. Also the ordering of the equipment also gets simplified along with proper monitoring. Further, approvals such as SACFA/WPC are also become better manageable.

Also the allocation of MW spots should be for the entire Service area and not for partial Service areas as has been done so far in many cases.

Finally, we submit that these assignments should be made on a time bound basis. It has been observed in previous cases that the radio access spectrum is allocated to the operators, however, the microwave carriers

are not assigned at the same time. For example, even though the NIA for November 2012 auction clearly stated that the existing microwave allocations would be re-validated, however the same is yet to be done, even after nearly 18 months, causing severe constraints on growth of services and also leading to demurrage losses on equipment imported.

The Government should appreciate that microwave carriers are a support infrastructure for radio spectrum. Any delay in allocation of microwave carriers leads to delay in rollout of services too, which are very stringent for operators and also time bound. Thus, it becomes difficult for operators to meet the rollout obligations in a timely manner. Hence, the Government should aim for timely allocation of microwave carriers.

Q8. Considering the fact that different TSPs may require additional carriers at different point of time, what should be the assignment criteria for allocation of additional carriers for MWA and MWB?

Idea Cellular's Response:

Additional MW carriers should be allocated based on the justification for additional requirement, which may be based on the guidelines submitted by us at Annexure C. The criteria may include factors such as requirement for point to point links, density of sites, amount of access spectrum being used for 3G and 4G/LTE, number of hub sites and MW links emanating from them, etc.

Q9. How can it be ensured that spectrum carriers assigned are used optimally and the TSPs are encouraged to move towards the OFC?

Idea Cellular's Response:

Operators who have MW Backbone Network would be forced to increase the roll out as MW can handle only limited bandwidth and can only meet the last mile bandwidth requirement of a few sites only. Beyond that, the bandwidth requires to be aggregated and considering the quantum of bandwidth required, the only solution is to use Fibre. Hence to provide a good throughput to the subscribers, Operators using 3G and 4G/ LTE technology will be eventually forced to have OFC POPs. However, the pace of fiberisation will depend on the ease of getting ROW, rationalization of high ROW costs (over Rs 8.5 Mn per Km in Mumbai) and the support of local Municipal Bodies in executing the OFC work.

Currently, there are various deterrents to fiberisation such as Right of Way (RoW) permissions being regulated by multiple local agencies and huge cost variations making it extremely expensive or non-viable in many urban areas. TRAI in its recommendations on 'National Broadband Plan' in December 2010 had highlighted that obtaining Right of Way (RoW) permission has become a major hurdle in rolling out new telecom infrastructure which requires laying of cables and thereby provisioning of advanced broadband services in a time bound manner.

Currently, the Government collects MWA/MWB charges based on revenue generated by a telecom operator. In our view, the same should be continued with inclusion of some "minimum charges". This would act as a deterrent to inefficient utilization of a national resource like this.

As already submitted in our response to Q 5 & Q 6, one mechanism can be to prescribe a "presumptive AGR" as minimum charges to be paid. This would lead to demand for additional carriers from only those operators who would be able to utilize these carriers effectively to generate enough revenue. The minimum charges should be

adequate enough to deter any person for just holding on to the carriers and not undertaking any operations or generating any revenue.

Q10. Should an upfront charge be levied on the assignment of MWA or MWB carriers, apart from the annual spectrum charges?

Q11. What should be the pricing mechanism for MWA and MWB carriers? Should the annual spectrum charges be levied as a percentage of AGR or on link-by-link basis or a combination of the two?

Idea Cellular’s Response:

It may be noted that the issue of microwave spectrum charging is currently sub judice. It is submitted that the charges for existing allocations and thereby the allocations themselves, are protected by the Judgment of the Ld. TDSAT that set aside the DoT Orders dated November 2006 and November 2008 in its Order dated 22 Apr-2010 in Petition No.122 of 2007. The DoT has challenged this Order before the Hon’ble Supreme Court, and filed Civil Appeal (D) No. 29714 of 2010 against the orders of TDSAT at Supreme Court. Though the Court has admitted the matter, it has not granted any stay to DoT.

Idea Cellular submits that the microwave charging mechanism should conform to the DoT order of 18.04.2002. The Order pegged the charges at a reasonable level while striking a fine balance between the Government revenues and operator needs. The fact that the policy has continued to be in vogue since 2002, albeit with the intervention of the TDSAT, itself speaks of its robustness and ability to account for the changes and challenges that came in with the passage of time

It is further submitted that the DoT Order of 2002 had rightly specified the charges to be levied towards the same based on the AGR. The charging mechanism as laid out under the said DoT Order was as follows:

Microwave Access

Service Area Type / Spectrum Charges	Circle	Metros
@ 0.25% of AGR per Annum	Spectrum Bandwidth upto 112 MHz. With 28 MHz BW per spot, this translates to 2 spots.	Spectrum Bandwidth upto 224 MHz. With 28 MHz BW per spot, this translates to 4 spots.
Additional @ 0.05% of AGR per Annum	Every additional 28 MHz or part thereof (if justified and assigned).	

Microwave Backbone

Service Area Type / Spectrum Charges	Circle / Metros
@ 0.10% of AGR per Annum	Spectrum Bandwidth upto 56 MHz With 28 MHz BW per spot, this translates to 1 spot.
Additional @ 0.05% of AGR per Annum	Every additional 28 MHz or part thereof (if justified and assigned)

Idea Cellular believes that the above-mentioned structure was a most appropriate and reasonable manner of ensuring allocation and charging for microwave spectrum. The charging model while being simple also took into account the scope for future revenue escalation basis the AGR growth, and hence is recommended to be continued in its present form.

Idea Cellular would like to reiterate that any allocation of spots should be on an AGR basis for entire service area and not on link by link basis, since this is likely to make the whole exercise of calculation complex and query prone.

Further, it is pertinent to note that the access providers in the Indian telecom sector are already reeling under huge debts and progressively declining returns. In its own Study Paper Number 50/2013 on Shareholding Pattern, Financing Pattern and Capital Structure of Indian Private Telecom Access Service Providers dated the 19th Nov 2013, TRAI has acknowledged that after their initial success, Indian telecom companies are confronted today with serious growth challenges and the sector is characterized by mounting competition, declining average revenue per user (ARPU) and rising costs that have put tremendous pressure on operating margins. It is thus clear that any additional costs by way of any upfront charges to be added to the existing AGR based variable charge will put additional stress on the operator margins which will not be in the interest of the sector and consumers.

You may also note that Ld. TDSAT has already quashed the 2006/2008 policy and as on today 2002 policy is the only applicable policy. It is thus most surprising that DoT/ WPC is insisting of 2006 policy even in 2010 and thereafter (as seen in agreement signed in 2010). **Firstly the 2006 policy was without an specific recommendation of TRAI and secondly when the 2006 policy itself has been quashed , then the DoT/ WPC should not unnecessarily burden the Industry with additional costs.** The TRAI needs to make a specific recommendation that DoT should desist from arbitrarily imposing any policy which is without TRAI recommendations and leads to additional burden on the Industry.

Q12. In case of percentage AGR based pricing, is there any need to change the existing slabs prescribed by the DoT in 2006 and 2008? Please justify your answer.

Idea Cellular's Response:

The subsequent DoT orders of 2006 and 2008, unjustly aimed at converting the microwave allocation into a revenue enhancement exercise, supposedly to encourage efficient usage. This in our submission was erroneous and the Authority needs to reconsider the DoT action based on actual revenue generation on account of microwave charges over last few years and also consider mechanism to ensure efficient usage.

You may also note that Ld. TDSAT has already quashed the 2006/2008 policy and as on today 2002 policy is the only applicable policy. It is thus most surprising that DoT/ WPC is insisting of 2006 policy even in 2010 and thereafter (as seen in agreement signed in 2010). **Firstly the 2006 policy was without an specific recommendation of TRAI and secondly when the 2006 policy itself has been quashed , then the DoT/ WPC should not unnecessarily burden the Industry with additional costs.** The TRAI needs to make a specific recommendation that DoT should desist from arbitrarily imposing any policy which is without TRAI recommendations and leads to additional burden on the Industry.

As already submitted, we believe that the DoT Order of 2002 laid down a most appropriate and reasonable manner of ensuring allocation and charging for microwave spectrum. The charging model while being simple

also took into account the scope for future revenue escalation basis the AGR growth, and hence is recommended to be continued in its present form.

Q13. In case link-by-link based charging mechanism is adopted then:

(a) Should the spectrum be priced differently for different MW spectrum bands (6GHz/7GHz/13GHz/15GHz/18GHz/21 GHz/26 GHz/28GHz/32GHz/42 GHz etc)? If yes, by what formula should these be charged?

(b) What are the factors (viz as mentioned in para 3.22), that should appear in the formula? Please elaborate each and every factor suggested.

Idea Cellular’s Response:

It is further submitted that the DoT Order of 2002 had rightly specified the charges to be levied towards the same based on the AGR. The charging mechanism as laid out under the said DoT Order was as follows:

Microwave Access

Service Area Type / Spectrum Charges	Circle	Metros
@ 0.25% of AGR per Annum	Spectrum Bandwidth upto 112 MHz. With 28 MHz BW per spot, this translates to 2 spots.	Spectrum Bandwidth upto 224 MHz. With 28 MHz BW per spot, this translates to 4 spots.
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Microwave Backbone

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@ 0.10% of AGR per Annum	Spectrum Bandwidth upto 56 MHz With 28 MHz BW per spot, this translates to 1 spot.
Additional @ 0.05% of AGR per Annum	Every additional 28 MHz or part thereof (if justified and assigned)

Idea Cellular believes that the above-mentioned structure was a most appropriate and reasonable manner of ensuring allocation and charging for microwave spectrum. The charging model while being simple also took into account the scope for future revenue escalation basis the growth in operator’s AGR, and hence is recommended to be continued in its present form.

Q14. Should the option of assignment of MWA carriers in all the spectrum bands in 6-42 GHz range be explored in line with other countries? What are the likely issues in its assignment MWA carriers in these additional spectrum bands?

Idea Cellular's Response:

Idea Cellular supports the exploring of 11GHz, 26GHz, 28GHz, 32GHz, 38 GHz, & 42 GHz bands for use in MWA (Terrestrial Microwave Radio links).

Q15. In your opinion, what is the appropriate time for considering assignment of MWA carriers in higher frequency bands viz. E-band and V-band?

Idea Cellular's Response:

Idea Cellular believes that the assignment of MWA carriers in higher frequency bands viz., E-band and V-band may be considered immediately as the equipment in these bands is currently available. Since the hop length distance for E and V band is very short, V-Band should be planned for small cell. E-Band will be required in fiber constraint scenario upto 3-4Km.

Q16. Should E-band be fully regulated or there should be light touch regulations?

Idea Cellular's Response:

It is submitted that E-band allocation be based on "light touch Regulation" decided based on discussions with the Industry. However, the allocation of these bands should also be on exclusive basis to an Operator and only to those Operators who are offering 3G and 4G Services.

Q17. What charging/pricing mechanism would be appropriate for these bands?

Idea Cellular's Response:

We submit that since these bands would be new from a network roll-out perspective, these may be allowed for free network usage to licensed service provider. As time progresses and the usage stabilizes, the Authority may consider, minimum charging based on link to link basis for these bands as there usage would be only in limited numbers in dense areas and only for specific applications. Such charging will ensure that the technology usage does not remain restricted.

Q18. Apart from Q1-Q17, stakeholders are requested to bring out any other issue, which needs to be examined, with justification.

Timely allocation of spots and WPC approvals are essential for rapid roll outs and equipment ordering. This aspect needs a specific recommendation from TRAI.

Annexure B

Point to Point Access Network design Guidelines

- a) Access network normally PDH or Hybrid (PDH/IP) hops in 15GHz, 18GHz and 23GHz bands used as the last mile or aggregation transport for BTS sites.
- b) A typical network would be a mix of rings and spur links.
- c) Rain availability Criteria for Access hops shall be 99.995% (Annual Availability). ITU Rain rate (i.e. mm/h not exceeded for more than 0.01% of the year) shall be used to fading due to rain.
- d) Guaranteed BER receiver threshold for 10^{-6} is to be considered for link availability calculations.
- e) The Frequency spot selection while planning a hop should be based on the following criteria:
- First priority should be to use lower frequency band as far as possible if it is not leading to increased interference.
 - The frequency loading should be evenly distributed across the spots as far as possible.
 - **Threshold degradation should be less than 3dB.** Threshold degradation means interference in network which can need additional frequency spot for network
 - Typically, 2 links should be planned in one frequency spot from any sites to avoid any undue MW spectrum requirements.
 - Transmit Power and Receiver Sensitivity : -The transmit power/Receiver Sensitivity is given in dBm.
 - Traffic Capacity: - The equipment set on Modulation scheme QAM level
 - Fade Margin :- Normally a fade margin of 30-40 dB may be kept for Access and Back Bone Links
 - Angle of Antenna Separation or Antenna characteristics
 - Reliability of Links :-G826, Power, equipment and Propagation losses
 - Clearance Criteria: - The minimum clearance criteria for free space loss condition is 60 % of First Fresnel Zone (FFZ) at $K=4/3$.

Annual Chain Availability

- a) PDH: 0.9999^n
- b) SPDH: 0.99995^n
- c) SDH: 0.99999^n

Where n is the number of hops in the chain. PDH annual chain availability shall be 99.95%. SDH annual chain availability shall be 99.995% considering a maximum of 6 hops in a chain.

These are all the basic principles on which frequency spot requirement for any technology is to be calculated based on the actual Microwave network. The no of spots required will be calculated based on actual network and the interference in the network.

For 2G the MW spot needs to be allocated based on Network size & Type. For 3G & BWA technology, Access MW frequency spots to be allocated in similar fashion depending on Capacity requirement.