Motorola Southern Africa Ltd.

Response to ICASA

on

notice inviting comments regarding draft radio frequency spectrum fee regulations

(Govt. Gazette No 32029)

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Compiled by:

RJ Seeber
Government Relations Manager
Motorola Southern Africa (Pty) Ltd.
Woodmead North Office Park
54 Maxwell Drive
Woodmead
Sandton
South Africa.

1. Introduction

This is Motorola's response to ICASA's invitation in Government Gazette 32029, dated 16 March 2009, for representations re ICASA's invitation for comments regarding Draft Radio Frequency Spectrum Fee Regulations.

Motorola is very grateful for an opportunity to respond.

Motorola is a leading global manufacturer of a variety of mobile technologies for public access land mobile systems, including GSM, UMTS, CDMA2000 and WiMAX. Motorola is also taking a lead in the development of LTE products. In addition, Motorola is a leading global supplier of two-way radio systems, including radio trunked technologies such as TETRA. Motorola also is a global leader in wireless broadband point-to-point, point-to-multipoint and on-premise broadband technologies operating in shared frequency bands. Motorola views itself as being in a good position to comment on certain aspects of the draft regulations.

Our comments are in two categories, general comments and comments relating to the 5.8GHz frequency band.

2. Comments

2.1 General comments

We must congratulate ICASA for addressing the subject of spectrum fees in a methodical and rational manner. We agree that spectrum fees need to be revised from time to time.

Role of spectrum pricing

We agree with the role of spectrum pricing as stated.

Administrative spectrum pricing

We in general also agree with the principle of administrative incentive pricing and the reasons for having that. We view this to be the right approach in view of South Africa currently having a system of spectrum licensing, and not a system of trading spectrum as a property right.

Trading spectrum means that spectrum naturally assumes a market value, which to a large extent will lead to:

- finding a balance between demand and supply
- providing incentives for using spectrum more effectively and efficiently – i.e. leading to greater spectrum utilisation efficiency
- a natural incentive for sharing spectrum (and sharing costs)
- a closer link between the value of spectrum and the value of the services

The fact that auctioning is mentioned by ICASA as a possibility for the future is already a step towards bringing market forces into play – something that should be encouraged. However, it must be realised that there is a fundamental difference in auctioning spectrum for the purpose of a licence and auctioning spectrum as a tradable commodity and with property rights.

So, although we consider trading spectrum a means of naturally overcoming many of the problems presented, this is something for future debate. We will not further discuss the merits of that in this document.

We believe ICASA is correct in stating that the spectrum fee must at least cover the administration costs of granting and administering the licence.

We agree that spectrum fees should contribute to making good ICASA's costs re monitoring, interference investigations, international coordination and spectrum policy development. However, we believe that fees of ECNS and ECS licences should also contribute to these activities.

We see no reference to any suggestion for that spectrum fees should provide for ICASA's budget in total, or make up any shortfalls in ICASA's budget. We totally agree that this should not be an objective of collecting spectrum fees. We are of the opinion that ICASA's operating expenses should, for the major part, be covered by a Parliamentary grant – as is currently the situation. We have seen across the world how increasing spectrum fees for purposes other than managing the spectrum leads to increasing the cost of telecommunications – to the detriment of the development of the country and its people.

We are also of the opinion that using a licensing system with administrative pricing must go hand in hand with treating some parts of the spectrum as licence exempt. The question should always be asked: For the specific frequency band in question, which is more appropriate, issuing licences or making available the spectrum as a licence-exempt resource for all? It must always be kept in mind that licensing carries the penalty of the cost of administering the licence by ICASA, apart from other hidden costs to the user. It must be appreciated that the use of licence-exempt spectrum is an easy-to-apply system in many cases. What is more, the use of licence-exempt spectrum could lead to much greater spectrum utilisation efficiency than is possible with a system of licensing. The chance of exploiting the white spaces are just so much greater when licence-exempt spectrum is used. It is the equivalent of the public park accommodating more people than is customarily accommodated in private gardens.

Parameters

We agree with the approach of using formulas for determining the spectrum fee and furthermore that these should be based on the parameters indicated. However, we are of the view that cases might arise, where despite these factors, the spectrum fee still comes to a figure that is higher than can be justified or afforded by the user. For instance, in these times when South Africa is faced with a huge backlog in broadband connectivity, not only in rural areas but also in urban areas, it would be sad to see any spectrum fee leading to plans for implementing broadband networks being abandoned.

We have done some calculations using the formula for point-to-point links using the band 5.725-5.85 GHz (the 5.8GHz band), which in many countries – but not in South Africa – is licence exempt. We have come to the conclusion that the formula and the values for the parameters proposed by ICASA will lead to exorbitant spectrum costs – the annual licence fee being equivalent to half the cost of the equipment! (This is further discussed in section 2.2.) The factor for minimum hop-length, especially, is a problem. We feel this should be dropped or somehow radically revised. (See discussion in section 2.2)

The result of too high a fee will be that many private electronic communication networks (PECNs) and many networks that could have been deployed by wireless Internet service providers (ISPs) will not come into being. This will be especially hard-hitting in large tracts of rural areas, where there exists a total lack of broadband capacity and where broadband networks are urgently needed. For instance, whereas a Geographic Factor of 0.5% for low-density rural areas might be workable for some technologies serving some applications in certain frequency bands, it is not acceptable for the kind of network envisaged for the 5.8GHz band.

In order to overcome the above problem it might be expedient to bring in another factor, perhaps called the discounting factor (the DISC factor). ICASA should have the jurisdiction to make this factor whatever ICASA considers to be appropriate, on a case by case basis. It should therefore not have a value cast in stone in the regulations. This factor could perhaps also depend on Government policies, for instance, the great priority given by Government to rural development. It should in principle be possible to vary this factor between 0.001 and 1, depending on the merits.

The DISC factor will be a means of making adjustments where reality checks show that the increase in spectrum fee, as determined by the suggested formula, will be much higher than reasonable. It will also enable spectrum fees that must increase appreciably from what they are now, to be phased in over a number of years. We consider increasing any user's fees by more than 15%, as compared to what they are today, to not be reasonable. Such increases will be totally out of line with Government policy to contain inflation and will have negative economic impact – something South Africa cannot afford. Should ICASA raise the spectrum fee too radically, ICASA stands the risk of being accused – by Government and the public – of being a major contributor to inflation. This will simply not convey the right perceptions, in these difficult economic times.

Parameter values

Parameter values intuitively feel in order, when weighed up against each other, except for the geographic factor. The geographic factor is a problem in relation to rural areas. Considering the great need for communication networks in rural areas, especially broadband networks, ICASA should go out of its way to encourage networks in these areas. We think there is good justification for adjusting the low-density figure to a very small fraction – perhaps as low as 0.001%. There might even be justification for ICASA to not try to recover, in rural areas, the full costs of administering the licence.

Urgency of the regulations

We consider it very important that ICASA publish the regulations as soon as possible. To have the regulations outstanding is one more regulatory uncertainty that potential investors have to contend with. It's not good for encouraging investment. It will be good for the country to have the regulations in place soon. The regulations could contribute significantly in getting investment for the much needed development of the country's telecommunications.

2.2 Spectrum pricing and the 5.8GHz band

The need for the 5.8GHz band

This band, especially the portion 5725-5850 MHz, is so important for the development of broadband connectivity in South Africa that we have to single it out. ICASA launched a public enquiry[1] on this band in March 2006 and this enquiry has not been concluded. The result is that the band, most suitable for reasonably priced wireless equipment for PTP and PTMP technologies, is not yet available for use in South Africa. We believe the desperate need for this band has now come to a point where ICASA needs to give the band proper recognition.

The 5.8GHz band is a band that could play a major role in the development of broadband connectivity in South Africa, in both PECNs and ECNS and in both urban and rural areas, especially the latter. In terms of Government priorities for the development of rural areas, this is very important.

The fact of the matter is that should this band not be made available soon and made available licence exempt, as we have proposed in our submission[2], it will be a major blow to the provision of wireless broadband connectivity in South Africa, especially in rural areas. This band is the only band that, on a licence-exempt basis, enables broadband connectivity over longer distances. It can provide links, using Motorola technology, that are up to 200km long. It is therefore an ideal band for cost-effectively reaching deep into rural areas, with throughputs of 1Mbit/s to 300 Mbit/s, depending on the equipment used.

There is a dire need for this band to be used for providing connectivity to schools and colleges, also for distance learning. There is also a dire need for this band to be used for connectivity to hospitals and clinics, for telemedicine. Many a municipal and government office, especially in rural areas, could benefit from the use of this band. Many a new ISP, who could serve internet cafes and telecentres in rural areas, apart from serving businesses, individuals, municipal, provincial and central government offices, could come into being if this band is available.

The impact of the band on South Africa

The availability of this band on a licence-exempt basis could be the single most important factor for radically changing the face of rural development in South Africa. It could provide broadband connectivity to selected users of a throughput, latency and quality of service, equal to the best available in urban areas.

One should ask oneself the following questions: Is there any hope for bringing rural areas into the mainstream of the global economy without proper broadband connectivity? Is there any hope of the development of the students in rural schools being on a par with students in urban schools without broadband Internet connectivity and connectivity that allows for video? Can a clinic or hospital in a deep rural area, far away from the medical specialists in the large hospitals, ever hope to serve their patients with services comparable to those in large hospitals, without fast,

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[1] ICASA's invitation for representations on “The use of the band 5725-5875 MHz for broadband fixed wireless access", published as notice No 221 of 2006, in Govt. Gazette No 28600, dated 8 March 2006.

[2] Motorola's response to ICASA's invitation for representations in regard to the use of the band 5725-5875MHz for broadband fixed wireless access. Government Gazette No 28600, 8 March 2006.

interactive video and voice? The answer to all these questions is a definite "No". Unless low-latency broadband communication is available, it cannot be done. And broadband communication in rural areas can today be provided cost-effectively by the wireless technologies that are available, notably some of the technologies manufactured by Motorola.

Making available this band will contribute, in a major way, to stimulating economic and social development in rural areas, as well as improving service delivery in the government arena in rural areas. This is very important, especially in view of Government's renewed focus on rural development.

We are not aware of any entity that will be disadvantaged should this band be made available on a licence-exempt basis.

The relevance of spectrum pricing for this band

ICASA might ask what is the relevance of the above to the pricing of spectrum. The issue is simply the following: Unless the 5.8GHz band is made available soon and unless the band is licence exempt or, alternatively, made available at a very small token licence fee, the development of the type of network mentioned above will be seriously hampered.

We will illustrate the problem of the licence fee by means of an example:

A school in a rural area needs to be linked to another school, 4km away – so as to videoconference and share video information, during a classroom session, on electronic whiteboards. Two Motorola wireless backhaul units, operating in the 5.8GHz band, is to be used for the link. The units use an RF bandwidth of 20MHz and provide a throughput of 3.5Mbit/s in both directions. The retail price of a unit is roughly R10000. The following factors would apply:

Unit price = R2000
Frequency factor FREQ = 0.3
Bandwidth factor BW = 20MHz
Congestion factor CG = 1.0
Geographical factor GEO = 0.5
Sharing factor SHR = 1.0
HOPMINI = SQRT(16/4) = 2
UNIBI = 1

The annual fee = R2000*0.3*20*1*0.5*1*2*1 = R12000

The total cost of the link being R10000 x 2 = R20000, the R12000 spectrum fee is appreciable. Within 20 months the cost of licensing would have exceeded the cost of equipment! We consider a spectrum fee more than about 5% of the cost of equipment to be a significant deterrent to deployment. In the case in question we would therefore consider a fee of more than about R1000 to be a problem.

At closer examination it appears as though the factor for minimum hop-length (HOPMINI) is very penalising. It needs to be kept in mind that it often is not good engineering to switch to a higher band for shorter links. For instance, in a rural environment, should one for the mere purpose of keeping the licence fee down switch from 5.8GHz to 28GHz, one will be faced with

having to use significantly more expensive technology. At the same time one will be suffering from a radically reduced system availability, because of rain attenuation. That while, from a technical point of view, there would be no advantage to oneself or to other users in the area, to make the switch.

The problem presented by the hop-length factor can be better appreciated when one needs to consider that a link could be as short as 100m. In the case of linking to a school you might have to first link to a mast nearby – such as a cellphone mast on the school grounds – and to then have a short link to the school building. In the above case HOPMINI will become SQRT(16/0.1) = 12.6. That will cause the annual fee for the link to be R75600 – totally unworkable!

Should the 5.8GHz not be made available licence exempt, ICASA needs to seriously reconsider the manner in which the fee for spectrum in this band is determined.

In summary on the 5.8GHz band

We appeal to ICASA to not further delay making the band available and making it available licence exempt. However, if the latter is not possible, to then make the band available at a very small licence fee. For that, the formulas and the values of the parameters that apply to PTP and PTMP will have to be radically revised.

3. Summary and conclusion

ICASA's suggest methods of pricing spectrum is fundamentally sound, but needs refinement so as to not deter the rollout of networks, especially networks for providing broadband capacity to schools, colleges, hospitals, clinics, Internet cafes, businesses and individuals, especially in rural areas. Certain factors need to be revisited. Critical to service delivery and economic and social development in rural areas is the availability of the 5.8GHz band. Should this band not be licence exempt the formulas for systems in this band need to be radically revised, for the band to be a useful resource.

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