



RADIO ADVISORY BOARD OF CANADA
CONSEIL CONSULTATIF CANADIEN DE LA RADIO

File: 5200

4 December 1998

Industry Canada
300 Slater Street,
Ottawa, ON
K1A 0C8

Attention: **Director General**
Radiocommunications and Broadcasting Regulatory Branch

Subject: **Radio Advisory Board of Canada Response on:**
DGRB-003-98, Consultation On The 24 And 38 GHz Frequency Bands: Proposed
Policy And Licensing Procedures Dated 5 September 1998

Dear Mr. Skora;

The Radio Advisory Board of Canada's response to Canada Gazette Notice DGRB-003-98 is attached.

Please note two points.

This response is going to ballot to-day, also. The issue required considerable effort within the RABC and it was impossible to complete the work and go to ballot before 30 November 1998. The Board's formal ballot process will close on 18 December 1998 and ballot results and comments will be forwarded then.

The RABC Executive may recommend, to Sponsors, some editorial changes to the text on page 4 dealing with licenses for private companies rather than regulated carriers.

The Board thanks Industry Canada for the work involved in preparing this plan and for the opportunity to comment.

Yours truly

E.R. (Ted) Campbell
General Manager

Enclosure: 1

Radio Advisory Board of Canada

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Conseil consultatif canadien de la radio

**Response to Industry Canada on
Gazette Notice DGRB-003-98 dated 1998-08-28
And companion document DGRB-002-98 dated 1998-08-28**

Consultation on the 24 and 38GHz Frequency Bands:
Proposed Policy and Licensing Procedures
And Framework for Spectrum Auctions in Canada

1. Introduction

The Radio Advisory Board of Canada, hereinafter referred to as “The Board or the RABC”, has reviewed Industry Canada’s document entitled “Consultation on the 24 and 38GHz Frequency Bands: Proposed Policy and Licensing Procedures” and companion document “Framework for Spectrum Auctions in Canada” as outlined under Gazette Notices DGRB-003-98 and DGRB-002-98.

In general the Board in its previous submissions on the topic of Spectrum Auctions, has not favoured this method of allocating spectrum. This view has not changed, however realizing that many administrations world-wide have adopted Spectrum Auctions as being a method to stimulate the introduction of competitive technologies, the Board, in the interest of ensuring that Canada can take a leadership role, offers the following comments:

RABC Response to specific questions raised in DGRB-003-98

Section 3.1.1 The 24GHz Band

Interested parties are requested to comment on the 24GHz band plan. Any alternate band plan proposals are welcome.

The Department notes that the proposed block arrangement is harmonized with the spectrum designated in this band for similar utilization in the United States.

The RABC notes that, among other reasons, financing is facilitated when band plans are consistent with the United States and agrees with the band plan as suggested. Harmonization with the United States presents a greater opportunity for equipment manufacturers to serve a larger customer base with consequential cost reductions.

Section 3.1.2. 1-2 The 38GHz Band

Q. Interested parties are requested to comment on the 38GHz band plan and proposed options.

The Department proposes two options as part of the 38 GHz band plan:

assign seven 50+50 MHz paired blocks for broadband point-to-point or point-to-multipoint systems on an exclusive basis, with the remaining two 50+50 MHz paired blocks being added to the five existing 50+50 MHz paired blocks to be available on a shared basis for point-to-point systems only; or

assign all nine 50+50 MHz paired blocks for broadband point-to-point or point-to-multipoint systems on an exclusive basis.

A large majority of the members of the RABC are of the view that the demand for point-to-point applications on a shared FCFS basis is likely to exceed the supply of FCFS spectrum afforded for this purpose by only five paired blocks. This would suggest that the Department should proceed with option (1) above.

It should be noted that this recommendation is in accordance with the Department's current FCFS licensing policy for the licensing of radio systems in a particular band which takes into consideration the growth plans of existing radio systems. Furthermore, in connection with the Department's proposal in DGTP-009-97 for improving the FCFS licensing process, the RABC has commented that "it is important to note that if a band is indeed being used effectively by existing users, that perhaps satisfying the growth plans for existing users of the band should be the priority for the remaining spectrum".

The RABC notes that some sponsor members have expressed concerns with the existing sharing arrangements, but is confident that these issues can be resolved in a satisfactory manner with the introduction of RABC's proposed document to Industry Canada on 38 GHz co-ordination procedures.

Section 3.1.2. 3-5 Spectrum Requirements

Q. Comments are sought on the amount of spectrum that is required to support the business plans of the operators wishing to continue to deploy point to point systems in the shared blocks. Further comments are sought on the spectrum policy provisions contained within Appendix A.

As stated above, a large majority of the sponsors of the Board are of the view that there is sufficient demand for point-to-point applications on a shared FCFS basis, to justify retaining a minimum of seven paired 50 + 50 MHz blocks for this purpose.

The Board also notes that in paragraph 5 of 3.1.2, Industry Canada proposes to place other services sharing the band 38.6-40 GHz on a lower status with respect to the Fixed Service (FS). This would result in these other services being operated on a quasi-secondary basis, because of the restriction placed on these services to protect the FS and not restricting their growth. It is also noted that this band is also allocated to the Fixed-Satellite Service (space-to-Earth) as part of a larger allocation covering the 37.5-40.5 GHz band. In addition, WRC-97 allocated the 40.5-42.5 GHz band to the FSS, but not in all Regions. It is technically feasible to operate some limited number of earth stations under the no-protection, no restriction basis to the FS, because these earth stations would be receiving and not transmitting in this band, such that they cannot be causing interference into the FS. These earth stations must take the appropriate measures to protect themselves from interference thereby ensuring no restrictions on the growth of the FS. Therefore, the entire 3 GHz between 37.5 to 40.5 GHz, including to a limited extent the sub-band 38.6 - 40.0 GHz, subject to the above constraints on the FSS, would be available for such operations. Telesat currently has planned systems, filed with the ITU, which would operate across this frequency band, paired with the uplink allocation near 50 GHz.

In addition, it is necessary for the FSS to also have access to exclusive frequency bands, which would allow for the deployment of small ubiquitous terminals, currently envisaged in certain parts of the 37.5-40.5 GHz band, outside the band 38.4 to 40.0 GHz. Because of the global nature of these FSS services, the allocations should be harmonized world-wide.

Section 3.2 Allocation Issues

Comments are sought on the proposed changes to the Canadian Table of Frequency Allocations and views on suitable sharing and co-ordination criteria which would facilitate the use of these bands by the fixed service and by incumbent primary services.

In order to reduce the risk that spectrum purchased by a successful bidder might become subject to interference by "in-band use", the Board feels that the following undertaking is required:

Industry Canada will undertake to propose an addition of a fixed allocation for Region 2 at the next competent International Telecommunications Conference (not later than the year 2002) in the bands 24.25-24.45 GHz and 25.05-25.25 GHz on a primary basis. If it is not possible to obtain a Region 2 allocation, Industry Canada will guarantee that, at the very least, it will add a footnote in the international Region 2 Table of Frequency Allocations specifying that the bands 24.25-24.45 GHz and 25.05-25.25 GHz are allocated on a primary basis in Canada to the fixed service.

Section 3.3.2 Eligibility Requirements

Comments are sought on the eligibility requirements proposed

The Board has examined the eligibility requirements proposed by the Department with great interest and a large amount of discussion. There were those that felt that this was a retrograde move by the Department and that there should be no spectrum cap placed on potential bidders for spectrum in the 24 and 38 GHz frequency bands. Others were of the opinion that spectrum caps are an effective tool for safeguarding competition, and some suggested that the proposed cap of 700 MHz of spectrum was too large and should be reduced to a smaller amount. The Board could not reach a consensus on this matter.

The Board notes that there may also be large private users that seek to purchase spectrum in the 24 and 38 GHz licensing process. The eligibility criteria for private users should be consistent with the rules specified in the Radiocommunications Act which, the Board notes, are significantly less stringent than for Canadian carriers as specified in the regulations made pursuant to the Telecommunications and Radiocommunications Acts.

Section 4.2 Service Areas

Comments are sought on the proposal to use Tier 3 service areas for the licensing of the 24GHz and 38GHz bands.

Based on the requirement that each licensed area must be large enough in population to be able to support a reasonable business case, but not be too large such that effective competition in the provision of new services will eliminate all except those who are capable of very large capital investments, the Board is in agreement with the Department's view that Tier 3 services areas as defined in Appendix B of the Consultation Document, are the most appropriate size.

Section 4.3 Spectrum Licence Packages

Comments are sought on the proposed Spectrum Licence Packages

The RABC considers that the Department's proposal to package all of the auctioned 24 and 38 GHz spectrum blocks into large spectrum licences (>200 MHz) effectively excludes from the auction users who may require smaller amounts of spectrum for their business needs. This exclusion runs counter to one of the Department's stated motivations for spectrum auctions, which is to permit an efficient allocation of spectrum resources among different competing uses.

The Board was unable to reach consensus on this issue, but offers two alternatives for Option 1, proposed by members:

to provide three extra 50 + 50 MHz licences by breaking up Licence C (300 MHz) or

to provide one extra 50 + 50 MHz licence by taking block C/C' in Table 2 from Licence B (400 MHz) in Table 3.

In the former case this results in 1 X 400 MHz and 3 X 50 + 50 MHz licences; in the latter case 2 X 300 MHz and 1 X 50 + 50 MHz licences, all in the 38 GHz band. The 1 X 200 + 200 MHz in the 24 GHz band remains.

Should the Department choose to pursue Option 2 under its 38 GHz band plan, the proposed 200 MHz licence should be broken into two separate 50 + 50 MHz licences.

Section 4.5 Transfer and Division of Licences and Flexibility of Use

Comments are sought on a moratorium of up to three years on the transferability of licences following the licensing process.

Comments are sought on a moratorium of up to three years on the divisibility of licences following the licensing process.

The Board is of the view that no moratorium should be introduced in relation to the transferability and divisibility of licences following the licensing process. The intent of the moratorium as suggested by Industry Canada is to discourage speculative bidding, however, we believe that due to the size of the Canadian marketplace and the financial risks associated with auctions the disadvantages of a moratorium far outweigh its perceived benefits. The licensees should not be artificially constrained. They should be permitted to transfer their licence in whole or in part, however minimum frequency limits based on current block sizes of 40 + 40 MHz for the 24 GHz band and 50 + 50 MHz for the 38 GHz band should be applicable.

Some sponsors' support for rejecting these moratoria is contingent on the implementation of appropriate competitive safeguards such as spectrum caps.

Section 4.6 Implementation of Services

Comments are sought as to whether there should be a condition of licence that requires licensees to implement their service within a specified time period that is less than the proposed licence renewal period. Further, views are sought on the possible mechanisms that could be employed to verify the implementation of service within the stated time period.

The Board believes that in view of the fact that licensees will have invested a significant amount of capital to acquire the licence, that this provision may be redundant. Further a licensee may have a legitimate reason for deferring the implementation of service, such as waiting for the introduction of a new technology etc. Therefore imposing a time limit may not be appropriate.

However there may be justification to take some measures to prevent warehousing of spectrum. As such some minimal requirement for licensees to demonstrate their intentions to utilize the spectrum within a reasonable time after the award of the licence, may be appropriate.

Section 4.7 Conditions of Licence

Comments are sought on these proposed conditions

The Board notes that the proposed licence conditions are those that are currently imposed under a Comparative Selection or FCFS licensing regime. For spectrum allocated by an auction, most members agree that proposed licence condition 6 (the requirement for a percentage of revenue to be invested in R&D) is inappropriate. The Board believes that this has not been well thought out. The wording suggests that if a licensee such as a bank wants to buy and use a 38 GHz link in Toronto to inter-connect all its branches, some or perhaps all of its revenue would become subject to a requirement that 2% be invested in R&D. Similarly, if a telecommunications carrier that is wireline-based chose to do the same (buy by auction a 38 GHz licence), a commitment of 2% of all? of its revenues must be devoted to R&D. This proposed condition of licence in its current state, needs clarification at the very least but the Board recommends instead that the Department rethink this proposed condition of licence with a view to eliminating it.

Further, agreement by each Sponsor member concerning proposed licence conditions 8 & 9 (aggregation limits and transferability & divisibility) is dependent upon the Department's decisions concerning these issues at the conclusion of the current consultation period. The Board also notes that licence condition 7 (annual compliance reports) and 10 (implementation time limits) may need to be reviewed by the Department in light of the Board's comments.

In condition 3 there is a requirement to ensure that certain conditions are met although no site specific licences will be issued. The Board believes that there should be a requirement for type approval for equipment used to ensure that emissions from transmitters, particularly at band edges, do not cause harmful interference into adjacent bands.

Also the Board recommends that there be a requirement for a communication process between licensees to ensure that frequency co-ordination can be accomplished between adjacent licence holders.

Additionally, the Board is concerned with proposed licence condition 2. While agreeing with the objectives of the *Solicitor General's Enforcement Standards for Lawful Interception of Telecommunications* (Rev. Nov.95), the RABC knows from experience that these standards were and still are written to apply to single channel voice traffic. The spirit of these standards might be applied as a condition of these licences but the text is not appropriate to wideband transmission systems and there would be great difficulty in their application as they are written today.

Furthermore, the Board notes that such conditions are not applied to other microwave systems open for use for wideband transmission. As such, the Department is beginning to deviate from a technology neutral policy, now requiring some wireless licensees to follow certain national conditions of licence while others need not follow them.

According to the Department's proposed eligibility rules, a private user would be eligible to enter, bid and win a licence in the 24/38 GHz auction process. Should this happen, it seems inappropriate for a licensee, which is using this spectrum exclusively for his own use to have to submit to "wiretap" conditions of licence before he can obtain his authorization. The RABC believes that this whole area of the Department's proposal needs serious rethinking to be workable or it needs to be discarded in its entirety.

With the exception of the above, the Board is in general agreement with the proposed conditions of licence.

Section 5.0 Technical Considerations

Q. Comments are sought on a suitable trigger mechanism and the appropriate value. (The details may be developed in consultation with the Radio Advisory Board of Canada (RABC))

5.3 Communications between Licensees

The Board notes with interest the comments provided by the Department on the concept of trigger thresholds for communicating between licensees. The RABC has studied this matter as it relates to frequency co-ordination in blocks of spectrum licensed on a first-come-first-served (FCFS) basis at 38 GHz. The Board wishes to point out that a

preliminary agreement has been reached among the RABC sponsor members. The agreement specifies a keyhole distance that triggers co-ordination for FCFS point-to-point, co-channel cases. The keyhole azimuths have been derived based on a determination of expected correlation between desired and undesired signals.

We believe that the keyhole approach will provide an acceptable methodology that both minimizes unnecessary co-ordination and facilitates more effective use of the licensed spectrum. This approach however, will require some additional time by the licensees of the FCFS spectrum blocks to experience-rate the threshold values on a going forward basis. Nevertheless, the Board would propose that the Department, as a practical solution to communication between licensees, consider the keyhole approach. The Board will be pursuing this topic further, in particular for the point-to-multipoint case and wishes to do so in consultation with the Department.

Q. Comments and proposals are sought on the most suitable models and trigger mechanisms to be used by Industry Canada when called upon to arbitrate on an unresolved dispute resulting from interference between systems operating in these bands.

Implementation

The Board believes that cases of arbitration could be kept to a minimum if the Department strongly encourages communication between licensees. Interference models and trigger mechanisms will be key to the arbitration process, although licensees should also be given the flexibility to find non-technical solutions to difficult interference cases. Furthermore, we would encourage the Department to set reasonably stringent, technology independent, out-of-block emission specifications at the licensed band edge so that frequency co-ordination and possible cases of arbitration will be limited to co-channel, adjacent service area situations. At 38 GHz, the frequency reuse distances are not large; as a consequence, cases of adjacent Tier 3 service area interference, which need to be arbitrated, will be small. The Board does not have specific models and trigger levels to propose to the Department at this stage. An interference model might include an industry-agreed standard of minimum C/I or I/N values for various modulation schemes and performance requirements of a ‘virtual victim’ receiver at the service area boundary. However, we would like to work expeditiously with the Department to find an acceptable solution.

Section 5.4 Interference Consideration

Comments are sought on the suitability of an emission limit to reduce the occurrence of adjacent channel block interference under the current proposals for spectrum and geographic distribution.

The Board is in favour of using out-of-block (OOB) emission limits as the preferred mechanism for reducing the occurrence of adjacent block interference, both in the frequency and geographic dimensions. This approach has been successfully introduced in SRSP-510, which deals with multiple different bandwidth air interface protocols in adjacent blocks of the licensed PCS band. The concept of technology independent criteria to limit OOB emissions facilitates the harmonious use of adjacent spectrum blocks without unnecessarily constraining operator flexibility.

The Board further notes that Tier 3 service areas should be large enough to minimize potential cases of adjacent area interference. Finally, although hub co-location may at times represent a workable means for limiting interference, Industry Canada should not force hub co-location as a general rule. Rather, Industry Canada should allow operators to determine between themselves the best method to deal with specific interference situations.

Section 6.0 Licensing Process

The RABC believes that the individual sponsor organizations represented by the Board will likely have their own views on the proposed auctioning process. The RABC therefore does not wish to provide any comments on this section. Individual sponsor organizations will provide their own comments.

Section 7.0 Financial Aspects of the Auction

Reserve Prices

Comments are sought on the absolute and relative level of reserve prices

The Department has proposed a reserve price of \$4,700 per bidder eligibility point. The RABC notes that the Department arrived at this number by assuming that the cost of spectrum management in Canada is \$1 million per year per 1 GHz, distributing this annuity over an infinite number of years then converting the annuity number into a lump sum up-front payment at a discount rate of 6.5%. However, if the annuity was distributed over a 10 years period instead, to correspond to the 10 year licence period, the Department would have obtained a lump sum up-front payment of approximately \$7.19 million, less than the currently proposed price figure.

The Board understands that the value of \$4,700.00 was derived based on an Industry Canada spectrum management cost recovery formula. Therefore, if a minimum bid is required at a cost recovery level, then any higher bid represents profit for the Department. The Board is of the opinion that any profits derived from the proposed auction should be directed towards reducing station and spectrum licence fees in other areas rather than placing these revenues into the Treasury Board coffers.

The Board recommends that the Department re-examine its cost recovery formula in light of the above noted comments. In particular, given that the initial licence term is proposed to be ten years, it would be more reasonable for the annuity to be distributed over the 10-year licence period. If, however, the Department's aims to take into account the long-term nature of the auctioned licences, then distributing the annuity over an infinite period may be appropriate. The Board emphasizes that in conjunction with the Department's proposal, there should be no licence renewal fees as the spectrum management costs will already have been recovered by the reserve price and any bids exceeding the reserve price.

Pre Auction Deposits

Q. Comments are sought on whether the proposed deposit amounts will satisfy the goals stated above.

The RABC believes that the individual sponsor organizations represented by the Board will likely have their own views on the proposed auctioning process. The RABC therefore does not wish to provide any comments on this section. Individual sponsor organizations will provide their own comments.

Appendix A

Spectrum Utilization Policy Provisions for Point to Point Systems Authorized on a First Come First Served Basis

Comments are requested on the policy provisions outlined in this attachment

With regard to the aggregation limits for the two portions of the FCFS section of the 38.4-40.0 GHz band, as set out in items 1.2.5 and 1.3.6 of Appendix A, the Board believes these limits should apply separately and independently to any particular licensee in any particular area, such that, in a given area, a licensee could operate in a composite total of three, and possibly four, FCFS, shared blocks, up to two in the bi-directional portion of the band, plus, one, and on a case-by-case basis, a second, in the uni-directional portion.