

Radio Advisory Board of Canada

Conseil consultatif canadien de la radio

July 28, 2010

Industry Canada, 300 Slater Street,
Ottawa, Ontario, K1A 0C8.

By email at: **wireless@ic.gc.ca**

Subject: **Canada Gazette, Part I, May 14, 2010, Notice No. DGTP-002-10
Consultation on the Use of the Band 25.25-28.35 GHz**

The Radio Advisory Board of Canada is pleased to respond Canada Gazette, Part I, May 14, 2010, Notice No. DGTP-002-10 Consultation on the Use of the Band 25.25-28.35 GHz

The Board's response, prepared by RABC's Fixed Wireless Committee, is attached.

This response was balloted to Board members. Eleven of the RABC's 11 members responded as follows: 9 approved, 1 approved with comments, 1 abstention and 0 disapprove ballots.

The Sponsor Member's comment (which form an integral part of the RABC's response) is as follows:

Comments from the Canadian Satellite and Space Industry Forum:

1. CSSIF fully supports the comments contained in Section 6.3 concerning the telephone equivalency fee model and the resultant penalizing of spectrum efficiency. This has long been an issue for both satellite and earth station licensing, and has yet to be addressed by the Department.
2. CSSIF disagrees with the response under Annex B concerning geostationary satellite orbit avoidance. The band 25.25 - 27.5 GHz is subject to the provisions of Article 21.2 of the ITU Radio Regulations. Orbit avoidance should be a requirement of both interim and permanent licensing requirements.

Yours truly,



Roger Poirier
General Manager

**Canada Gazette, Part I, May 14, 2010, Notice No. DGTP-002-10
Consultation on the Use of the Band 25.25-28.35 GHz**

Response of the Radio Advisory Board of Canada

Introduction

The Radio Advisory Board of Canada is pleased to respond to Canada Gazette, Part I, May 14, 2010, Notice No. DGTP-002-10 — Consultation on the Use of the Band 25.25-28.35 GHz

The RABC has undertaken a review of the Consultation Document through a broadly-based working group. The Board is pleased with the Department's decision in opening the lower and upper portions of the band 25.25-28.35 GHz (25.25-26.5 GHz and 27.5-28.35 GHz respectively) for fixed systems. Because of recent changes to the bands 14.5 and 11 GHz, the amount of spectrum available in Canada for fixed systems is becoming critically scarce particularly in large urban areas. The re-assignment of spectrum in this band and potentially others in the near term will hopefully alleviate spectrum shortages for backhaul applications.

Our responses below adopt the same section numbering scheme as used in the Department's Consultation document.

4. First-Come, First-Served (FCFS)

The Department seeks comments on implementing an FCFS licensing process in the bands 25.25-26.5 GHz and 27.5-28.35 GHz.

As is stated in the Consultation Document, FCFS licensing is typically used for point-to-point applications for backhaul or similar applications and is based on the amount of spectrum needed for immediate implementation.

The Board is in agreement with the view of the Department that the first-come, first-served licensing approach be used for the bands 25.25-26.5 GHz and 27.5-28.35 GHz.

5. Spectrum Structure

Given the very different European and U.S. band plans, the Department seeks comments on the two band plan options provided above.

In the Consultation Document, the Department has provided two options for a new Canadian band plan to include elements of both the existing European plan and that of the United States.

The main issue of consideration in this analysis is the availability of equipment to operate in these bands. As we've noted on numerous occasions, the Canadian market alone is inadequate in size to support specialized microwave equipment at an affordable cost. Unfortunately, because of the band structure available in Canada, we are unable to take full advantage of equipment that is already produced for the European and other markets.

Basically we do not support either of the two options proposed by the Department. Instead we propose an alternate band structure.

For the lower part 25.25 – 26.5 GHz, we recommend adopting in part the band structure of Option 1 to take advantage of the availability of equipment being produced for the European market. This would provide for six 28 MHz channels operating in FDD mode as proposed. Depending on the emerging demand for TDD or FDD spectrum, and the possibility of new equipment development, the band plan of the remaining spectrum could be examined a later date.

For the upper part 27.5 – 28.35 GHz, we propose to allocate the spectrum for FDD operation. The following Table provides some options in this regard:

CS (MHz)	# channels	Duplex	Guard band low	Center gap	Guard band high
50	8	420	15	20	15
40	10	420	15	20	15
30	13	420	25	30	15
20	20	420	15	20	15
10	40	420	15	20	15

Note: In all configurations except for 30MHz, the lower block is from 27.515-27.915 GHz and the upper block is from 27.935-28.335 GHz

For the 30MHz channel configuration, the lower block is from 27.525.-27.915 GHz and the upper block is from 27.945-28.335 GHz

Comments are also sought on point-to-point versus point-to-multipoint systems, i.e. is one expected to be more heavily deployed than the other? Are both systems compatible in the same frequency range?

We believe the greater demand will be for point-to-point systems. With careful engineering, both point-to-point and point-to-multipoint systems of a given operator should be able to operate in the same frequency range. However, different types of systems used by different operators co-channel in the same geography we believe would be a significant coordination challenge. We recommend that band plans and technical standards be based on preference being given to point-to-point systems in FDD allocations. Whereas TDD allocations may support both Point to Point and Point to Multipoint systems.

Is there greater interest in deploying FDD or TDD systems in this band?

Our information to-date is that the main demand will be for FDD systems to support much-needed backhaul applications. One member of the Working Group has expressed interest in developing Point to Point and Point to Multipoint TDD systems in this band.

Other than the two options provided, is there another band plan that Industry Canada should be considering? If yes, provide supporting information/rationale and address any related issue outlined herein.

Our proposal is discussed above.

Specifically, for the band 25.25-26.5 GHz:

Are channel bandwidths of 28 MHz appropriate? Is it beneficial to align with the European band plan in terms of duplex spacing given that FDD operation will be limited to six paired channels? Is there interest in making equipment to support Option 2, with the same channeling plan as in Europe, but with a different duplex spacing for FDD operation?

For the band 25.25 – 26.5 GHz, we believe it is necessary to align with the European band plan in order to take advantage of readily available equipment. A different duplex spacing in this part of the band would necessitate the development of new equipment specifically for the Canadian market. We suggest this development would be unlikely to occur.

Specifically, for the band 27.5-28.35 GHz:

Is it preferable to have channel bandwidths of 25 or 50 MHz, or channel bandwidths of 28 MHz?

Our proposal for the 27.5 – 28.35 GHz band is discussed above.

5.2 Spectrum Access

In order to keep the band available on an FCFS basis, the Department proposes to apply the following principles:

- (a) Assignments of blocks will be on an “as needed” basis. Licensees will be required to demonstrate their need for spectrum for each request.
- (b) A second block will only be assigned to a licensee in the same service area when the original block assignment cannot be reused.
- (c) Assignments will be brought into service within a period not greater than six months from receipt of an approval-in-principle/licence.
- (d) A licensee will be assigned the same frequency blocks, to the extent possible, in all authorized service areas.
- (e) Requests for wide area authorization, for example, large regions of a province, will not be considered.
- (f) Point-to-point systems may have shared access where it is determined that their usage requirements are low.

- (g) Should demand exceed supply in a particular area, the Department reserves the right to review the use and consider a competitive process at any time.

The Department seeks comments on these principles.

In general, the Board is in agreement with these principles.

6. Licensing

The Department outlines two possible approaches for licensing including “Spectrum Licensing and “Radio Station Licensing”. In addition, the Consultation Paper proposes that, for spectrum licensees, the service area be user-defined whereby licensees would be granted spectrum licence authority to use specific frequencies within user-defined service areas. Service area boundaries would be clearly defined by using standard geographical coordinates or other technically verifiable means (e.g. 25 km radius of specific latitude/longitude coordinates).

The Department seeks comments on the licensing options and the use of a user-defined service area.

The Board favours a spectrum licensing approach for this band and supports the concept of user-defined service areas.

6.3 Licence Fees

In the Consultation Paper, the Department seeks comments on licensing options for the band and has proposed an annual fee of \$0.00003205 per MHz per population, with a minimum of \$150 per licence.

This proposed fee structure introduces a potential source of confusion: the population applicable to the licence at hand is difficult to determine for point-to-point systems.

The Consultation seeks comments on items such as the use of the spectrum for fixed point-to-point systems. The RABC has determined that there is a large interest in using the spectrum for short-hop, fixed, point-to-point FDD systems, i.e. for transport. As a result, it is difficult to determine the applicable population for a transport system: the size of the population at each radio transceiver cannot readily be determined. Also, it would not be reasonable to include the population spanned by the point-to-point radio link if that population is not accessed by the same radio link, as in the case of an access radio system. Clearly, tying fixed point-to-point fees to population is unworkable and would not be appropriate. The RABC believes that the Department should implement the same fee and fee structure that is used in the 38 GHz band, i.e. on a spectrum grid-cell basis, using the same grid-cell map as that used for 38 GHz. (Reference: CPC-2-1-17, Issue 3, sections 3.7 and 3.5.)

In the event that the Department elects to implement a fee structure of price per MHz per population, the RABC recommends that the fee rate be adjusted so that the aggregate level of resulting fees does not exceed the aggregate level of current fixed point-to-point fees in the 38 GHz band.

The Board notes from the Consultation document that the Department's intention is to charge licence fees on a per radio link for systems with site based licensing, and that these fees would be based on telephone channel equivalencies in accordance with Section 65 of the Radiocommunication Regulations.

The telephone channel equivalency model found in the Radiocommunication Regulations is based on analog microwave links, with a fixed spectral efficiency, where a higher number of channels corresponds directly to a higher RF bandwidth. For digital radio systems, with varying spectral efficiencies, application of the telephone channel equivalency model to determine a licence fee can frequently result in an operator actually being penalized for deploying a more spectrally efficient system. For example, an operator could choose to deploy a radio system with a higher spectral efficiency (bits/sec/Hz) in the same RF bandwidth, in order to achieve a higher throughput capacity. In doing so, the licence fee as determined from the telephone channel equivalency model would result in a higher fee for the more spectrally efficient system, and therefore penalizes the operator, even though in this example both systems are using the same amount of RF spectrum.

In the opinion of the Board, radio licence fees for spectrum users should be based on the amount of spectrum they are using. The deployment of radio systems with higher spectral efficiencies should not be penalized. Therefore the Board recommends to the Department that a radio licence fee model for fixed radio links with site based licensing (i.e. point to point fixed systems) be developed based on the amount of RF bandwidth being utilized per frequency. The Board also recommends that this new model be applied to all fixed service (FS) bands, and not just the 28 GHz band. In the interest of fairness, the Board also recommends that this new fee model for fixed systems be "revenue neutral", as much as possible, so that overall licence fees for existing systems will not be raised upon application of the new model.

Annex B – Technical Parameters for Interim Licenses

In general we are in agreement with the technical parameters.

However, on an operational basis, there do not appear to be any justifications for provision in Annex B for avoiding the US border or the location of satellites in orbit (provisions (c) and (d) of the "Interim Technical Requirements"). These constraints will likely cause difficulties for operators and the Department should review the need for these requirements.