RABC / CCCR
1-888-902-5768
www.rabc.ottawa.on.ca

**Radio Advisory Board of Canada** **Conseil consultatif canadien de la radio**

September 3, 2010

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

By email at: **spectrum.operations@ic.gc.ca**

Subject: Canada Gazette, Part I, June 10, 2010, Canada Gazette, Part I, June 4, 2010, Notice No. DGSO-001-10: Decisions on the Transition to Broadband Radio Service (BRS) in the Band 2500-2690 MHz and Consultation on Changes Related to the Band Plan

The Radio Advisory Board of Canada is pleased to respond Canada Gazette, Part I, June 10, 2010, Canada Gazette, Part I, June 4, 2010, Notice No. DGSO-001-10: Decisions on the Transition to Broadband Radio Service (BRS) in the Band 2500-2690 MHz and Consultation on Changes Related to the Band Plan

The Board's response, prepared by RABC's Mobile and Personal Communications Committee, is attached.

This response was balloted to Board members. Eleven of the RABC's 13 members responded as follows: 9 approved, 1 approved with comments, 2 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 TELUS:**

"Please see TELUS submission regarding quantum of spectrum to be returned by incumbents for BRS."

Yours truly,

Roger Poirier
General Manager

**Radio Advisory Board of Canada** **Conseil consultatif canadien de la radio**
116 Albert Street, Suite 811 ☎ Phone: **+ 613 230 3261**
Ottawa, ON ✉E-mail: **r.a.b.c@on.aibn.com**
K1P 5G3 🖷 Fax: **+ 613 230 3262**
💻Web site: **http://www.rabc.ottawa.on.ca/**

**Canada Gazette, Part I, June 12, 2010, Notice No. DGSO-001-10: Decisions on the Transition to Broadband Radio Service (BRS) in the Band 2500-2690 MHz and Consultation on Changes Related to the Band Plan**

# Response of the Radio Advisory Board of Canada

## *Introduction*

The Radio Advisory Board of Canada (RABC) is pleased to respond to Canada Gazette, Part I, June 12, 2010, Notice No. DGSO-001-10: Decisions on the Transition to Broadband Radio Service (BRS) in the Band 2500-2690 MHz and Consultation on Changes Related to the Band Plan.

The RABC has undertaken a review of the Decision and Consultation Document through a broadly-based working group. In Part A of the Document, we note the various decisions of the Department in relation to MDS and MCS and the transition to BRS services.

Our comments below deal with Part B of the Consultation Document.

## Summary

1. The RABC does not support harmonization with the U.S. Band plan, presented as Option 1.
2. The RABC fully supports the Department's proposal to move to the international band plan.
3. The RABC recommends that the spectrum blocks be aligned with the international band plan as proposed in Option 2.
4. The RABC does not believe that the operation of TDD systems should be allowed in the FDD portion of the band plan, except for the duration of the incumbents' transition period.
5. The RABC does not believe that guard bands should be held in reserve by the Department. Rather, the guard band portions of the band plan should be assigned to TDD operators along with the obligation to avoid interference to FDD systems.

Further, we are of the opinion that the use of the guard bands by licence-exempt systems should be avoided.

6. In general we agree with pro-active re-assigning of spectrum blocks (both incumbent and returned spectrum) to facilitate deployments aligned with the international band plan.
7. The RABC believes that contiguous spectrum blocks should be assigned to operators in order to maximize spectrum efficiency. Any allocations should preferably be aligned on 5 MHz boundaries.
8. The RABC agrees that the band plan should emphasize the maximization of paired spectrum. Any need for guard bands between operators should be done in a consistent manner and aligned with the international band plan.
9. We believe that Industry Canada should make all efforts to align the overall use of spectrum with the international band plan. Incumbents should only be displaced on a "where necessary" basis to permit the implementation of new BRS systems by other licensees.

## Response to Part B – Consultation on Band Plan

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

### *Section 8. The Frequency Band Plan*

The RABC only supports the Department's proposal for the international band plan.

### *Section 8.1 Option 1 – Harmonize with the U.S. band plan*

This option loses any chance for harmonization in the international arena. Unless exactly the same technology as the U.S. is deployed, there will still be no roaming opportunities to the U.S. and no economies of scale with the global market. Furthermore, in trying to harmonize with the U.S. band plan today, the risk is that Canadian operators might be isolated in the future, if the U.S. operator with the majority of licences decides to change to some other technology or duplex arrangements. In addition, with Option 1, even using the same TDD duplex mode will incur the need for guard bands at the U.S./Canada border due to the potentially non-synchronized use of that mode. Further, for technologies (using either the FDD or TDD duplex mode) which

are multiples of 5 MHz in bandwidth, the U.S. band plan may provide an inefficient spectral utilization.

The RABC notes that the majority of incumbents ("Stakeholder Proposal Development") prefer to use a FDD arrangement, so limited U.S. harmonization would occur by incumbents.

In light of the above, the RABC does not support harmonization with the U.S. Band plan, presented as Option 1 in DGSO-001-10. We strongly believe that Option 1 should not be further considered by the Department because it simply cannot provide the economies of scale rendered possible by the proposed harmonization with the international band plan, presented as Option 2 in DGSO-001-10.

### *Section 8.2 Option 2 – Harmonize with the international band plan*

The RABC agrees that this band plan is aligned with the international Arrangement C1 from Recommendation ITU-R M.1036-3, CITEL Recommendation PCC.II/REC.8(IV-04) and CEPT Decision ECC/DEC/(05)05. The RABC believes Option 2 is aligned with 3GPP E-UTRA Band 7 (for FDD) and Band 38 (for TDD).

The RABC notes that base and user equipment compliant with Option 2 is available today from several vendors, which will provide immediate economies of scale without any requirement of Canadian customization and will immediately support international roaming.

RABC agrees with the Department's view regarding the advantages of using this option as identified in the consultation paper:

*"Implementing the Option 2 model of the band plan would offer a number of advantages:*

- *allow the deployment of both FDD and TDD systems;*
- *promote spectrum efficiency because guard bands, which are mostly unusable spectrum, would not be required between operators in adjacent FDD frequency blocks;*
- *permit global harmonization which would enable economies of scale for equipment and international roaming;*

- *facilitate equipment compatibility with other mobile band licensed in Canada on a paired basis; and*
- *access a wider range of services and applications which would be developed on a global basis.*"

Most importantly, RABC believes Option 2 offers regulatory certainty, providing spectrum users with a clear understanding of the value of the spectrum with respect to their business plans.

The RABC fully supports the Department's proposal that the spectrum blocks be aligned with this band plan. The RABC supports the adoption of the International band plan "Option 2" as proposed.

***Given the benefits of the internationally harmonized band plan, Industry Canada proposes to adopt the Option 2 model of the band plan for BRS in the band 2500-2690 MHz.***

***The Department seeks comments on its proposal to adopt the Option 2 model and on the following related elements:***
***1. Should operation of the TDD systems be permitted in the FDD portion of the band plan and, if so, under what conditions?***
***2. Should the guard band blocks 2570-2575 MHz and 2615-2620 MHz be held in reserve by Industry Canada or should they form part of the unpaired block (TDD)?***
***3. If the guard bands are to be held in reserve, should they be considered for future use by licence-exempt wireless systems?***

***Please provide comments on any additional technical details related to the band plan which are not addressed above.***

## Q1: Should operation of the TDD systems be permitted in the FDD portion of the band plan and, if so, under what conditions?

The RABC notes that interference is very likely to happen not only with base stations but with terminals as well. TDD systems operating in the FDD portion of the band plan would generate interference to:

- FDD systems operating in the same geographical area in the adjacent FDD blocks;

- FDD systems operating in the same frequency block, or in a frequency block overlapping with the block of the TDD system, and in an adjacent geographical area.

This situation will especially affect global roaming of portable /mobile equipment and would result in losing most of the benefits of adopting the international band plan.

The RABC does not believe that the operation of TDD systems should be allowed in the FDD portion of the band plan, except for the duration of the incumbents' transition period, which would only last until the implementation of the new band plan is completed.

For further clarity, the RABC is of the opinion that in a scenario where an incumbent would need to operate TDD systems in the FDD portion of the band plan for an extended period of time, the incumbent would need to provide the necessary guard bands to avoid interference.

**Q2: Should the guard band blocks 2570-2575 MHz and 2615-2620 MHz be held in reserve by Industry Canada or should they form part of the unpaired block (TDD)?**

The RABC believes that the guard band portions of the band plan should be assigned to TDD operators. Further, the RABC believes that as long as TDD operation does not inhibit FDD applications within the FDD portion of the band, then TDD systems may be permitted to operate within the guard bands; however, this suggests a possible constraint on TDD power limits within these guard bands to a maximum of that permitted for mobile stations. That being said, operators should have the obligation to put such guard bands effectively in place. The RABC further notes that the above does not preclude technological evolution.

**Q3. If the guard bands are to be held in reserve, should they be considered for future use by licence-exempt wireless systems?**

As indicated above, the RABC does not believe that guard bands should be held in reserve by the Department. Furthermore, the RABC notes that licence-exempt wireless systems, by their very nature, preclude the efficient assignment of guard bands, as such systems are very difficult to keep track of, monitor and, ultimately, efficiently regulate.

Taking into account that these limits do not provide full guarantee that aggregate interference to licensed systems will not occur, we are of the opinion that the use of the guard bands by licence-exempt systems should be avoided.

### Comments on Details Not Addressed Above

The RABC believes that contiguous spectrum blocks should be assigned to operators in order to maximize spectrum efficiency. Any allocations should preferably be aligned on 5 MHz boundaries. FDD spectrum should be allocated in a minimum of 20 MHz, i.e., 10+10 MHz paired blocks of contiguous spectrum; however, one sponsor member believes that FDD spectrum should be allocated in a minimum of 10 MHz, i.e., 5+5 MHz paired blocks of contiguous spectrum.

Looking at current deployments of advanced technologies, it can be seen that terminals typically support both multiple frequency bands and multiple (two or more) technologies based on market demand, so as to provide wide geographic support of services, even when the new technology is just being deployed and exists only in limited pockets of coverage. Such capability will provide some level of roaming to/from other bands both within Canada and also to the U.S. and internationally along with significant economies of scale from sharing the same terminal in multiple countries. For example in current initial LTE deployments in the U.S., user terminals support LTE in certain bands while supporting CDMA / 1xEVDO or GSM / HSDPA in other bands.

## 9.0 Mapping of Incumbents into Option 2 Band Plan

In general we agree with pro-active re-assigning of spectrum blocks (both incumbent and returned spectrum) to facilitate deployments aligned with the international band plan. But failing that, we believe that Industry Canada should encourage secondary market trading of spectrum, where that enhances utilization and banding of spectrum compliant with Option 2.

### 9.1 Regions where the Department holds the MDS spectrum

***The Department proposes to mandate the exchange of 20 MHz of the MDS spectrum held by Industry Canada for 20 MHz of the MCS spectrum licensed to the MCS incumbent as indicated in Figure 5.***

***Industry Canada seeks comments on this proposal.***

The RABC agrees that the band plan should emphasize the maximization of paired spectrum and therefore supports the proposal to mandate an exchange of incumbent and Department spectrum. Any need for guard bands between operators should be done in a consistent manner and aligned with the international band plan. Industry Canada should give some consideration to aligning the central 2596 MHz boundary with 2595 MHz, so as to permit the use of modern technologies with 5 MHz granularity.

## 9.2 Regions where MCS and MDS incumbents hold portions of spectrum

***Industry Canada seeks comments on whether government intervention is required where there are different MCS and MDS incumbents in the same geographic areas.***

The RABC agrees that the band plan should emphasize the maximization of paired spectrum. We believe that Industry Canada should make all efforts to align the overall use of spectrum with the international band plan, which suggests encouraging incumbents to move towards an alignment with the international band plan in a timely fashion. Intervention by the Department should only be considered on a "where necessary" basis. Any need for guard bands between operators should be done in a consistent manner and aligned with the international band plan. Industry Canada should give some consideration to aligning the central 2596 MHz boundary with 2595 MHz, so as to permit the use of modern technologies with 5 MHz granularity.

## 9.3 Effective use of the unpaired (TDD) block

***The Department seeks comments on the challenges faced by more than one operator in making efficient use of the TDD block. Should Industry Canada rely on market forces or should it develop specific technical rules to facilitate coexistence between two or more operators and alignment with the Option 2 Band Plan?***

The RABC believes that the most effective use of the TDD band is to build on the concept that many newer technologies are available for bandwidths that are multiples of 5 MHz. The RABC notes that licensing the unpaired block as a single 50 MHz block would likely result in a more efficient use of spectrum than licensing multiple smaller blocks of unpaired spectrum, but the RABC also recognizes that it is not possible for the Department to guarantee via auction, given the various incumbent holdings. Assuming the Department licenses more than one operator in the TDD block in the same geographic area, the Department should allow the concerned operators to work towards mutually agreed operational arrangements. Failing an agreement however, the Department could then intervene. We do not support assignment of guard bands that are not aligned on 5 MHz boundaries. Further, Industry Canada should give some consideration to aligning the central 2596 MHz boundary with 2595 MHz, so as to permit the use of modern technologies with 5 MHz granularity.

We also note that network synchronization between operators introduces operational complexities which will likely make it impractical to operate and may limit the creation of innovative services to customers. Finally, it should be noted that the question of whether future technologies such as LTE and WIMAX can be synchronized has yet to be answered.

## 9.4 Manitoba

***The Department proposes to mandate the exchange of 20 MHz of the MDS spectrum for 20 MHz of the MCS spectrum as indicated in Figure 10.***

***Industry Canada seeks comments on this proposal.***

While we understand that some site-specific licences and spectrum are being grandfathered, we believe that Industry Canada should make all efforts to align the overall use of spectrum with the international band plan, which suggests encouraging incumbents to move towards an alignment with the international band plan in a timely fashion. Incumbents should only be displaced on a "where necessary" basis to permit the implementation of new BRS systems by other licensees. The RABC agrees that the band plan should emphasize the maximization of paired spectrum.

### 9.5 Timing

***Industry Canada is seeking comments on the timing aspects related to the physical migration of the existing network facilities to the new band plan, including the timing required for the completion of all transactions regarding spectrum exchanges.***

The RABC recommends that incumbents should only be displaced from their existing spectrum assignments on a "where necessary" basis to permit the implementation of new BRS systems by other licensees. Incumbents should be given a period of 12 months starting from the issuance of a displacement notice by the Department. The Department should issue displacement notices after having reviewed and approved displacement requests from BRS licensees. The RABC notes that this approach would be consistent with the transition policy adopted by the Department for the Personal Communications Services (PCS) band[1] and the Advanced Wireless Services (AWS) band[2]. The RABC also notes that there could be geographical exceptions that would have to be dealt with on a case-by-case basis.

## 10. Next Steps

The RABC is willing to participate in any future Consultations on Policy and Licensing of this spectrum.

———————————

[1] *Displacement of Fixed Service Stations Operating in the 2 GHz Frequency Range to Accommodate Licensed Personal Communications Services (PCS)*, CPC-2-1-09, Issue 2, July 2008.
[2] *Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services*, DGTP-002-07, February 2007.