

**Radio Advisory Board of Canada**

**Conseil consultatif canadien de la radio**

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Subject: **Canada Gazette Notice SMSE-005-11 Consultation on a Policy and Technical Framework to License Spectrum in the Band 2500-2690 MHz**

The Radio Advisory Board of Canada is pleased to respond Canada Gazette, Part I, February 10, 2011 Canada Gazette Notice SMSE-005-11 Consultation on a Policy and Technical Framework to License Spectrum in the Band 2500-2690 MHz

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

This response was balloted to Board members. Fourteen of the RABC's 20 members responded as follows: 10 approved, 1 approved with comments, 3 abstentions and 0 disapproved.

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

**Comments from the Electro-Federation of Canada**

The EFC supports the RABC input with the exceptions of 5 + 5 MHz for FDD Block Sizes (section 3.6) and 10 MHz for TDD Block Sizes (section 3.9) and recommends that the Department allow for a minimum of 10 + 10 MHz for FDD and 20 MHz for TDD.

Yours truly,

A handwritten signature in black ink, appearing to read 'Roger Poirier', with a long horizontal flourish extending to the right.

Roger Poirier  
General Manager

**Canada Gazette Notice SMSE-005-11  
Consultation on a Policy and Technical Framework to  
License Spectrum in the Band 2500-2690 MHz**

**Response of the Radio Advisory Board of Canada**

**Executive Summary**

- 1.1 The RABC has reviewed SMSE-005-11 and offers responses to the specific questions raised by the Department in the Consultation Paper. The RABC has also commented on other areas of the Consultation Paper where input was deemed appropriate. The paragraphs are numbered for ease of reference.
- 1.2 Our specific recommendations are summarized below and developed in more detail in the specific sections. The RABC recommends that:
- 1.2.1 Industry Canada license the FDD spectrum in blocks of 5+5 MHz and allow bidders to assemble the blocks into larger contiguous blocks.
- 1.2.2 The Department permit voluntary spectrum swapping to facilitate spectrum aggregation.
- 1.2.3 Uniform TDD blocks sizes of 10 MHz with the possibility of spectrum aggregation and/or spectrum swapping be used.
- 1.2.4 The 5 MHz “restricted bands” at 2570-2575 MHz and 2615-2620 MHz be added to the adjacent allocated TDD blocks.
- 1.2.5 The specific geographic regions do not need special block size option(s).
- 1.2.6 Supporting a Tier 3 licence structure allows the market participants to determine the optimal business strategy to achieve rural build out.

1.2.7 Any roll-out requirements should reflect propagation differences between the 700 MHz and 2500 MHz bands.

### **3. Spectrum Packaging for Licensing**

#### **3.2 Block sizes**

In preparation for the future licensing of the 2500 MHz spectrum, the Department seeks comments on the following:

- 1-1 Should the block sizes be uniform in size?
- (a) If a uniform size is preferred, what size should be considered?
  - (b) If a mix of block sizes is preferred, what combinations and arrangements should be considered?

3.1 The RABC considers that block sizes be uniform in nature. The 3GPP standard for LTE allows for block sizes from 1.4 MHz to 20 MHz. The relative end user throughput efficiency for LTE decreases with decreasing channel bandwidth, due to the higher relative signalling overhead and decreasing trunking efficiency. The overhead in a 1.4 MHz channel is 40%, falling to a 20% overhead in a 20 MHz channel.

3.2 The demand for wireless services is expected to outstrip the ability of spectrum to meet that demand and therefore every effort must be made to ensure the most efficient use of spectrum in order to provide the highest quality of service to Canadians. The technology trend is towards larger bandwidths to support efficient delivery of broadband services to the end user. Users of the new systems will expect broadband services.

- 3.3 Other countries have ensured wide system bandwidth assignments in order to support broadband services either through licensing larger spectrum block sizes or by allowing operators to aggregate smaller block sizes. These networks will set the performance benchmarks against which others will be measured.
- 3.4 Cost efficiency factors into deployment when licensed geographic-tiering is overly fragmented and spectrum blocks are non-contiguous.
- 3.5 Although only a portion of the band will be auctioned it should be considered in its entirety when evaluating block sizes. This is the largest band of contiguous spectrum and therefore the perfect opportunity to provide for larger bandwidths.
- 3.6 Consequently, the RABC recommends that Industry Canada license the FDD spectrum in blocks of 5+5 MHz and that the Department allow bidders to assemble the 5+5 MHz blocks into larger contiguous blocks in the event that they wish to acquire larger blocks of contiguous spectrum, in order to support their business plans. This would provide more flexibility and would allow more operators to acquire BRS spectrum in the upcoming auction. In this regard we note that several administrations have allocated minimum block sizes of 10+10 MHz or larger.

- 3.7 In addition, the RABC recommends that, following the auction, the Department permit voluntary spectrum swapping to facilitate spectrum aggregation and, as a consequence, further increase the spectrum efficiency throughout this band.
- 3.8 This option is consistent with the RABC position for the 700 MHz band and should continue for the 2500 MHz band.
- 3.9 With regard to the allocation of TDD channels, and for the reasons given above, the RABC therefore recommends uniform TDD blocks sizes of 10 MHz with the possibility of spectrum aggregation and/or spectrum swapping be used. As per the RABC response to DGSO-001-10 and recognizing the Department’s Decision 1-5 in section 1.9 of SMSE-005-11, the RABC recommends that the 5 MHz “restricted bands” at 2570-2575 MHz and 2615-2620 MHz be added to the adjacent allocated TDD blocks above 2575 MHz and below 2615 MHz, respectively. Again, operation in these 5 MHz “restricted blocks” will be subject to the constraints described in Decision 1-5.

1-2	In the specific geographic regions discussed above and shown in Appendix A, which block size option(s) should be adopted and why is this option(s) preferred over the other options? Should the combinations and arrangements of block sizes be the same or different in different areas? Provide supporting rationale.
Provide comments separately for paired and unpaired spectrum blocks.	

- 3.10 The specific geographic regions do not need special block size option(s) when considering that the above 5+5 MHz option provides sufficient granularity in building wireless broadband networks while accounting for the incumbent positions in those areas. Again, this option is consistent with the RABC position for the 700 MHz band and should continue for the 2500 MHz band.

- 3.11 The specific concerns of spectrum fragmentation may be alleviated by voluntary sharing of infrastructure by multiple operators between TDD and/or FDD blocks.

#### **4. Promoting Competition**

##### **4.2 Promoting Service Deployment in Rural Areas**

4-1	Comments are sought on specific measures that could be adopted within the 2500 MHz spectrum auction process to ensure further deployment of BRS in rural and remote areas (e.g. roll-out conditions, tier structure, etc.).
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- 4.1 Supporting a Tier 3 licence structure allows the market participants to determine the optimal business strategy to achieve rural build out. Some specific roll-out conditions for licences may fail to recognize the challenges of 2500 MHz today for rural or remote area deployment.
- 4.2 With respect to the potential use of roll-out requirements, the RABC provides the following comments. First, we understand that the Department is contemplating whether to auction available 2500 MHz spectrum at the same time that it will auction 700 MHz spectrum, or separately. To the extent that the Department may be considering mandating roll-out requirements for one or both of these spectrum bands, it is important to note that these bands have different propagation characteristics. As the Department knows, the 2500 MHz band is suited for relatively short range coverage while the 700 MHz band is suited for longer range coverage. The RABC therefore believes that any roll-out requirements that may be imposed by the Department should reflect these differences.
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