

**BOMBARDIER**

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March 12, 2010

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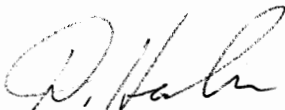
Dear Ms Miller:

Subject: Comments -- Canada Gazette -- Notice No.DGTP-010-09 -- Consultation on the Spectrum Allocations and Spectrum Utilization Policies for the Frequency Range 1435-1525 MHz (L-Band)

Bombardier Aerospace is pleased to submit the attached comments to Industry Canada in response to Notice No.DGTP-010-09, Consultation on the Spectrum Allocations and Spectrum Utilization Policies for the Frequency Range 1435-1525 MHz (L-Band) dated 11 December 2009.

If there are any questions regarding this submission, please do not hesitate to contact me at your convenience.

Yours truly,



Donald J Hoehn

Radio Frequency Specialist  
Bombardier Aerospace

Canada Gazette Notice No. DGTP-010-09

Consultation on the Spectrum Allocations and Spectrum Utilization Policies  
for the Frequency Range 1435-1525 MHz (L-Band)

Published in the Canada Gazette, Part 1 dated 11 December 2009

Bombardier Aerospace Response

12 March 2010

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## Introduction

Bombardier Aerospace (Bombardier Aerospace or the Company) is pleased to provide the following comments in response to Notice No. DGTP-010-09 -- *Consultation on the spectrum allocations and spectrum utilization policies for the frequency range 1435-1525 MHz (L-Band)* as published in the *Canada Gazette*, Part 1 dated 11 December 2009.

Industry Canada (or the Department) states the consultation paper, announced in the *Canada Gazette* notice DGTP-010-09, initiates a public review of the spectrum allocations and utilization policies for the band 1435-1525 MHz.

Bombardier Aerospace participated in the preparation of and, except where noted in the comments that follow, supports the comments submitted by the Radio Advisory Board of Canada (RABC) in response to this Notice.

Furthermore, Bombardier agrees with the RABC's conclusion that there has been insufficient time to undertake proper technical analysis related to the interference questions and further examination is required to determine whether AMT and SRS can co-exist. However, as indicated in the Notice, the aerospace industry has put forth an urgent requirement for AMT spectrum and further examination should not cause a delay to the Department's decision to implementation an interim AMT spectrum solution in the 1.4 GHz band if it is found to be necessary.

For ease of reference, the following comments are numbered according to the Notices' numbering system and are captioned accordingly. Similarly, each of the questions posed by the Department and addressed in this response are referenced to the Item numbers used by the Department in the Notice.

## Comments

### 1 Intent

***However, in response to an urgent requirement for AMT spectrum put forward by the aeronautical industry, the Department may authorize the use of AMT systems on an interim basis in unused portions of the 1.4 GHz band. Such licensing would be without prejudice to any future policy.***

The aerospace industry has put forth an urgent requirement for an additional 25 MHz AMT spectrum by the year 2012. The Department notes they may authorize the use of AMT systems on an interim basis in unused portions of the 1.4 GHz band. While the Department has not directly addressed an interim solution in the Notice, several comments regarding possible solutions are addressed in the RABC response. As the RABC has done, Bombardier will address several possible solutions under Item No. 1.

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## **3 Proposal for the Band 1492-1525 MHz**

### **3.2 Proposed Spectrum Utilization and Transition Policy Provisions**

#### **3.2.1 AMT**

##### **Item: 1**

***The Department proposes to designate the band 1492-1525 MHz for aeronautical mobile telemetry.***

The Company strongly supports the Department's proposal to designate the band 1492-1525 MHz for aeronautical mobile telemetry. The Canadian aerospace industry has been confronted by a shortage of AMT spectrum for several years. The shortage has already limited our capacity and that of other manufacturers for flight testing of existing products. More important, it now has the potential to affect plans for the development of the CSeries family of commercial aircraft. Without an additional 25 MHz of radio spectrum in the area, it will be technically impossible to carry out the CSeries flight test program, as planned, in Mirabel.

The Company is in agreement with the considerations and circumstances outlined by the Department in Section 3; Paragraph 3.3.1 of the Notice. In addition to the Department's considerations, Bombardier is pleased to provide the following comments.

The extraordinary growth in the complexity of modern aircraft and the proliferation of certification requirements are the two primary drivers of increased AMT spectrum requirements. The continual increase in flight test activities, requiring not only higher mission data rates, but also the concurrent use of real-time video is demanding wider telemetry channel bandwidths. Consequently, long-term AMT spectrum requirements in Canada are expected to reach 80 MHz by the year 2016 and upwards of 120 MHz by 2025.

In the U.S. the bands 1435-1525 MHz and 2360-2390 MHz are used exclusively for AMT. The Department's proposal to designate the upper sub-band for AMT would harmonize that portion of the band with the U.S. As the Department has indicated in their proposal, there are no plans in North America to use the band 1518-1525 MHz for MSS. Therefore, the possible use of the band 1518-1525 MHz for AMT in Canada should preclude MSS deployment.

The Company agrees with the RABC suggestion that some of the technical assumptions dealing with AMT/SRS interference have not been adequately studied. Further examination is required to determine if AMT and SRS can co-exist. The Company supports the full preparation of a test plan culminating with flying an aircraft equipped with telemetry transmitters operating in the 1492-1525 MHz band to see if the band can be shared between AMT and SRS. However, the study and testing should not delay the Department's decision on an interim solution for the urgent 2012 AMT spectrum requirement.



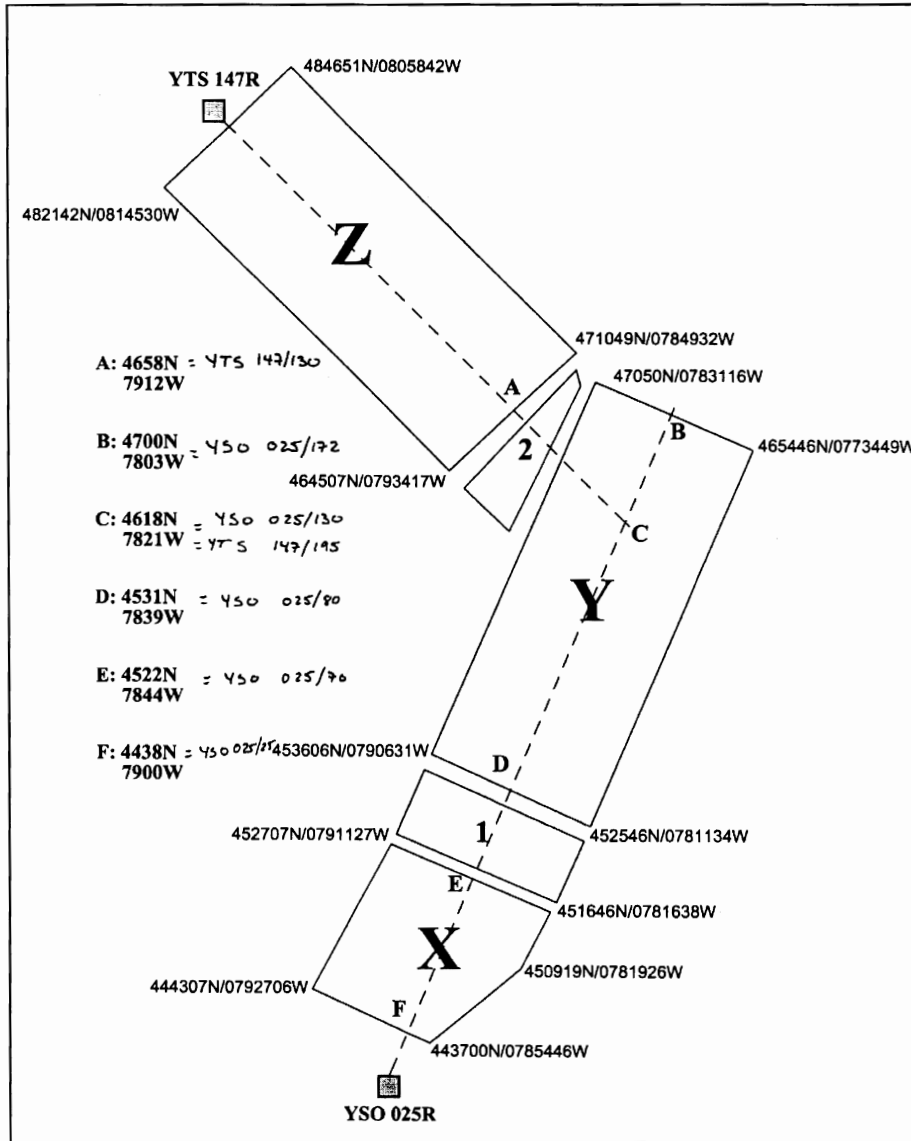


Figure 2 -- Toronto (Downsview) Flight-test Area

Due to line-of-sight limitations, these test areas typically do not extend beyond 320 km from the receive station. Therefore, the Department might consider limiting new AMT spectrum designations to a 320 km radius centered on points located at each of the two airports, Mirabel (YMX) and Downsview (YZD).

Any future temporary AMT requirements that may be required outside of these two 320 km zones in Canada would be related to specific testing (therefore reduced bandwidth required) and could likely be accommodated in the current S-band designation.

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***The Department also seeks comments on whether other portions of the range 1452-1525 MHz could be used for AMT.***

In the first section of the Notice, the Department indicates that in a response to an urgent requirement for additional AMT spectrum, they may consider authorizing the use of AMT systems on an interim basis in unused portions of the 1.4 GHz band. Such licensing would be without prejudice to any future policy.

As noted by the RABC in its submission, two alternatives to satisfy the urgent AMT spectrum requirement were put forward for discussion, the first of which included the use of this band. The first alternative is to authorize the 1452-1477 MHz band for AMT on an interim basis and relocate the limited number of DAB licensees to spectrum above 1477 MHz. The second alternative was to shorten the SRS notification and transition period, thereby making the 1492-1525 MHz band available for the 2012 time frame.

*1<sup>st</sup> Alternative: Authorize AMT systems on an interim basis in the band 1452-1477 MHz and relocate DAB licensees to spectrum above 1477 MHz.*

The Company believes this alternative would offer a good solution to the urgent AMT requirement for several reasons. First, according to Industry Canada's Assignment and Licensing System (ALS) database there are only four licenses issued in the 1452-1477 MHz band that fall within a 320 km radius around Mirabel or Downsview. Only two (DAB) of the four assignments would need to be relocated above 1477 MHz. The other two assignments (SRS) are located just north of Quebec City in an area unlikely to suffer interference from AMT.

While there was consensus amongst RABC members to rescind the DAB Allotment Plan for the band 1452-1492 MHz, another consultation, possibly lengthy, will be required to determine how the band will eventually be used. Furthermore, it appears the choices for low-cost equipment resulting from global economies of scale are limited for the band. This is most likely a result of two factors including the long-term use of the band for AMT in the U.S. and the recent re-farming of the spectrum by countries that once considered the band for DAB.

Making a premature decision on the 1452-1492 MHz band could create a unique market requiring a tremendous amount of equipment investment. This kind of customization is not likely to be supported, as is evident by the current situation in the band. The sensible decision might be to first sort out how the band will be utilized globally which will likely take some time. However, the additional time should lead to greater global harmonization, which in turn would allow for the creation of global economies of scale that will enable less complex and lower cost equipment. Until this type of equipment becomes available to support the band it will be difficult to determine what services can be offered in the band.

Authorizing AMT usage in the band 1452-1477 MHz during the 5-year SRS transition period will provide additional time for global economies of scale to develop for this band. This will eventually allow for deployment of advanced wireless technologies that ensure Canadian operators and consumers will benefit from a greater choice of low-cost equipment.

*2<sup>nd</sup> Alternative: shorten the SRS notification and transition period, thereby making the 1492-1525 MHz band available for the 2012 time frame.*

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Because a minimum 5-year notification period is required, the second alternative to shorten the SRS transition period could place undue burden on SRS incumbents. However, as noted earlier in this response, an investigation as to whether AMT and SRS can co-exist in the band should be pursued.

## **3.2.2 N-MCS for AMR**

### **Item 2:**

***The Department proposes to rescind the designation for narrowband multipoint communications systems (N-MCS) in the band 1493.5-1496.5 MHz.***

The Company agrees with the proposal to rescind the designation for narrowband multipoint communications systems (N-MCS) in the band 1493.5-1496.5 MHz.

## **3.2.3 Treatment of Incumbent SRS**

### **Item 3:**

***The Department proposes the following transition policy for SRS in the band 1492-1525 MHz:***

- ***SRS which may cause or be subject to harmful interference from existing or planned AMT systems will be subject to a transition policy.***
- ***The transition policy would provide a five-year notification period during which SRS are protected and may operate as licensed. Five years after receiving such notification, these systems may continue to operate on a no interference, no protection basis. Notification would be issued on an “as required basis.”***

***The Department seeks comments on the above proposal.***

The Company believes further engineering analysis and testing is required to determine if AMT and SRS can co-exist in the 1492-1525 MHz band. If new designations for AMT are limited to the two flight-test areas in question, Mirabel and Downsview, it would appear the numbers of SRS sites affected are quite limited and these could be dealt with on a case by case basis. As stated under Item 1, the Company will actively support further test and analysis.

Considering SRS systems are predominately rural applications and fixed AMT receiver systems are typically located in suburban areas and limited by line-of-sight, the possibility of interference from SRS to AMT would seem to be quite limited. On the other hand, considering a large portion of test flights take place in rural areas, the opportunity does exist for interference from AMT to SRS.

What is unclear is the number of SRS sights that could be impacted, the distance at which those sights become a victim to the aircraft transmitter and whether each situation could be dealt with using sound spectrum management techniques. Such management techniques might include adjustments to the output power or frequency of either system.

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## **4 Proposals for the Band 1452-1492 MHz**

### **4.2 Proposals for a Spectrum Utilization Policy for the Band 1452-1492 MHz**

#### **Item 4:**

*The Department proposes to rescind the DAB Allotment Plan for the band 1452-1492 MHz, including all associated channels to FM and AM stations across the full band 1452-1492 MHz.*

The Company agrees with the Department's proposal.

## **6 General Questions Related to the Band 1435-1525 MHz**

#### **Item 10:**

*The Department is seeking comments on the spectrum requirements of each application (AMT, SRS, and flexible use), the band plan and band division, and any issue that may impact the economic and social benefits that Canadians could derive from the use of this band. In particular, the Department seeks comments on how the different policy proposals could affect the cost of operation, the cost to subscribers, or competition.*

*In addition, the Department is planning or has already initiated various other consultation initiatives. As a result, the Department seeks guidance as to the timing to implement the outcomes of this consultation, including additional consultation exercises that may be required concerning licensing approaches, etc.*

A critical element of this consultation is the accommodation of AMT in the bands in question for long-term and possibly for an interim period. As stated previously in this response, our primary concern is that the additional 25 MHz of AMT spectrum requirement is met by the 2012 time frame. It should be emphasized that if adequate AMT capability and capacity is not available at Mirabel then the Company would need to consider relocating the CSeries flight test program with the associated financial impacts.

The Department also stated they will review the policy regarding the band 2360-2400 MHz in a forthcoming consultation that will also consider the new bands identified for AMT at the 2007 WRC. The Company believes this and the forthcoming consultation will provide sufficient opportunity to address the short-term and long-term needs of the aerospace industry. As we stated earlier in this response, long-term AMT spectrum requirements in Canada are expected to reach 80 MHz by the year 2016 and upwards of 120 MHz by 2025. The company believes these additional demands could be satisfied through the two consultations.

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## **7 Proposed Changes to the Canadian Table of Frequency Allocations for the Band 1492-1525 MHz**

### **7.1 MSS**

#### **Item 11:**

*The Department proposes to remove allocation entry for the mobile-satellite service from the Canadian Table of Frequency Allocations in the bands 1518-1525 MHz and associated footnotes 5.348, 5.348B, 5.351A and C31, as outlined in Annex 1. Also, the Department proposes to adopt international footnote 5.343 next to the mobile allocation.*

The Company agrees with the Departments proposal

#### **7.1.2 AMT**

##### **Item 12:**

*The Department proposes to merge the two sub-bands 1492-1518 MHz and 1518-1525 MHz, and to adopt international footnote 5.343 next to the mobile allocation.*

The Company agrees with the Departments proposal

#### **7.2.1 Broadcasting-Satellite Service (BSS)**

##### **Item 13:**

*The Department proposes to remove the allocation entry of broadcasting-satellite service (BSS) from the Canadian Table of Frequency Allocations in the band 1452-1492 MHz and suppress associated footnotes 5.208B, C28 and C40, as outlined in Annex 1.*

The Company agrees with the Departments proposal

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## **7.2.2 Mobile Service**

### **Item 14:**

*The Department proposes to elevate the status of mobile service to co-primary with broadcasting and fixed services in the band 1452-1492 MHz, as outlined in Annex 1.*

The Company agrees with the Department's proposal.

## **7.2.3 DAB**

### **Item 15:**

*The Department proposes to suppress Canadian footnotes C29 and C30 to reflect the co-primary nature of all allocations in the band 1452-1492, as outlined in Annex 1.*

The Company agrees with the Department's proposal.

## **7.3 Proposed Changes to the Canadian Table of Frequency Allocations for the Band 1435-1452 MHz**

### **Item 16:**

*The Department proposes to add international footnote 5.343 for the frequency range 1429-1452 MHz.*

The Company agrees with the Department's proposal. As the Company understands, the footnote is a part of an international agreement and without a separate bilateral agreement in place between Canada and the U.S., the footnote is in effect regardless of whether or not it is included in the Canadian Table of Frequency Allocations. Adding the footnote will simply raise the awareness that this condition does exist.

## **Conclusion**

Bombardier Aerospace appreciates the opportunity to provide its comments on this consultation.