

Radio Advisory Board of Canada

Conseil consultatif canadien de la radio

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Subject: Canada Gazette, Part I, January 10, 2009, Notice No. DGTP-003-08 —
Consultation Paper on the Possible Use of the Extended-Ku Spectrum Bands for
Direct-to-Home (DTH) Satellite Broadcasting Services

Introduction

The Radio Advisory Board of Canada is pleased to respond to Gazette Notice No. DGTP-003-08 — Consultation Paper on the Possible Use of the Extended-Ku Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting Services.

The Board's response, prepared by a Working Group, is attached.

This response was balloted to Board members. Fourteen of the RABC's 21 members responded, as follows: 6 Approved, 4 Approved with comment, 4 abstentions and 0 disapprove ballots.

The Sponsor Member's comments (which form an integral part of the RABC's response) are:

Comments from Rogers:

"Rogers is opposed to the proposal that the extended-Ku bands be designated only to the fixed satellite service for Direct-to-Home (DTH) satellite broadcasting services."

Comments from Bell Telecom Group

"The Bell Telecom Group, which for the purposes of this comment includes Bell Canada, Bell Mobility and Bell TV, objects to the proposal that the extended KU bands be designated only to the fixed satellite service for Direct-to-Home (DTH) satellite broadcasting service."

Comments from the Canadian Broadcasting Corporation

“CBC/Radio-Canada will submit its own comments separately emphasizing its particular support of certain points made in the RABC submission, specifically its general support for the proposal to change the spectrum utilization policy to allow the possible use of the "Extended-Ku" spectrum bands for (DTH) Satellite Broadcasting Services and other possible FSS usages.”

Comments of the Canadian Satellite and Space Industry Forum:

“CSSIF approves only the comments and responses put forth by the FSS operators”

Yours truly,

Original signed by R. Poirier

Roger Poirier
General Manager

Canada Gazette Notice DGTP-003-08
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Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting
Services

Response of the Radio Advisory Board of Canada

Introduction

The Radio Advisory Board of Canada (RABC) is pleased to respond to Canada Gazette Notice DGTP-003-08, Consultation Paper on the Possible Use of the Extended-Ku Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting Services.

The RABC has undertaken a review of the issues in relation to the use of the extended-Ku band. A working group with representation from fixed service operators, satellite and broadcasting interests has undertaken to respond to the Department's Consultation Paper. In this section, the Board has summarized a few of the key points raised in its response.

The RABC understands that the Department's consultation deals with both DTH and broadcast signal delivery services by satellite.

In dealing with any public consultation process, the RABC strives to develop consensus among its members thereby providing a clear industry position upon which the Department can make an informed decision. With the current consultation, it was not possible to reach general consensus among the two major user groups in the band in question, the fixed service (FS) and fixed-satellite service (FSS).

One area of agreement deals with the use of the extended-Ku band to provide FSS DTH satellite services on a non-standard basis. Both groups indicate that such an option is not viable.

The FS operators do not agree with any transition from the extended-Ku band; however, in the event that the Department elects to amend its policy to limit the use of the extended-Ku band by the FS, then both the fixed and fixed-satellite service communities agree that a reasonable transition period will be required.

FSS interests providing DTH and broadcast signal delivery services are resolute that because of technological, cost-effectiveness and regulatory concerns, there are no other viable options for the timely delivery of additional FSS DTH and broadcast signal delivery capacity than the Extended Ku band. All other candidate FSS and broadcasting-satellite service (BSS) bands are not suitable for reasons of unmarketable dish size (C-band), lack of capacity availability in the required orbital arc (Standard Ku-band and Planned BSS), or inability to meet the near-term requirement due to technological and/or regulatory reasons (Ka-band, 24/17 GHz, V-band, and W-band). Furthermore, use of the extended Ku-band for DTH and broadcast delivery services will permit satellites to be designed that provide back-up capability within the DTH neighbourhood, in the event of catastrophic failure of an existing conventional Ku-band satellite.

One direct-to-home service provider disagrees with the position that extended-Ku is the only option. In its view BSS properly belongs in the Ka-band for purposes of global development, and Ka options should be exhausted first. Furthermore, the design and installation of new residential antennas is common practice in the DTH business as part of capacity expansion investments.

Although the FSS has shared co-primary status with the FS in the entire 10.7-11.7 GHz band for several years, there are only about 20 FSS deployments in the entire 11 GHz band, reflecting, in the view of the FSS community, the impracticality of sharing with the FS. The FSS submits that the 1 GHz of spectrum should be segmented to allow more equitable access to the FSS. In particular, the 10.95-11.2 GHz and 11.45-11.7 GHz portions of the 10.7-11.7 GHz band should be designated for priority use by the FSS for the provisioning of DTH and broadcast signal delivery services; with this designation all FS systems would cease operation in those bands following a 3-year transition period.

On the other hand, FS operators and equipment manufacturers in the bands of interest are equally resolute in their position on the need for adequate spectrum to accommodate microwave backhaul systems in support of PCS, third and fourth generation mobile networks. In this regard, it is argued that the proposal to designate the extended-Ku band for exclusive satellite use would be a major financial hardship for the FS operators. Added to this concern is the fact that the Department has proposed in a separate consultation paper (DGTP-004-08) to similarly limit the same Fixed Service users from operating in the 15 GHz band. It is further argued that the BSS bands at 17/24 and 18/28 GHz offer a clear and viable alternative for DTH service delivery in Canada in the short term, as evidenced by the several US filings in these bands.

The FS operators and radio manufacturers have expressed their concern that detailed policy reviews, as was done in the SP 3-30 GHz proceedings in 2004, are intended to provide a stable regulatory environment so that operators and manufacturers can make investments in networks and equipment design. Rapid changes of fundamental policy, as is the case here, undermine that regulatory stability. The policy originally excluded the fixed satellite usage in urban areas, then two years later changed it to permit it to be used in urban areas after coordination with the FS, and is now considering expelling the FS altogether. The enunciated policy gave the satellite industry ample time to develop spectrum outside the Ku band to meet its future needs. If, in fact they have not done so is no reason to open up a new, albeit limited policy review, to the detriment of the FS industry.

Below we offer responses to the specific questions raised by the Department summarizing the positions of both parties.

1.(a) The Department seeks comments as to whether the spectrum utilization policy of the Ku frequency band 10.7-11.7 GHz should be changed to accommodate the provisioning of DTH services and, if so, what the designated use for each of the sub-bands should be.

FSS interests submit that the 10.7-11.7 GHz band should be segmented to allow more equitable access to the band for the FSS by designating the 10.95-11.2 GHz and 11.45-11.7 GHz portions of the 10.7-11.7 GHz spectrum for priority use by the FSS to support provisioning of Direct-to-Home (DTH) and broadcast signal delivery services. This designation is necessary to support the immediate requirement to plan for additional satellite capacity in 2011 in order to meet the requirements of Canadian broadcasting policy, and demand for High Definition video services ("HDTV"). No other FSS or BSS band is suitable for reasons of unmarketable dish size (C-band), lack of availability in the required orbital arc (Standard Ku-band and Planned BSS), or inability to meet the timing requirement due to technological and/or regulatory reasons (Ka-band, 24/17 GHz, V-band, and W-band). Furthermore, use of the extended Ku-band for DTH and broadcast delivery services will permit satellites to be designed that provide back-up capability within the DTH neighbourhood, in the event of catastrophic failure of an existing conventional Ku-band satellite. FS should have priority over the FSS in the bands 10.7 – 10.95 GHz and 11.2 – 11.45 GHz. Use of the FSS in these bands would be limited to applications that pose minimal constraints on the deployment of the FS such as gateway earth stations that support feeder links to the MSS operating in accordance with footnote C16C.

FS operators believe that the above segmentation proposal is not equitable because it seeks to eliminate the FS from half the band and requires the FS to share the other half. FS operators oppose the change to the utilization policy stressing that they view a great difference between DTH broadcasting services and DTH services in that the former is essentially a BSS service coming under CRTC jurisdiction. As such the contention is that there are alternatives available to the extended-Ku band, namely the use of Ka bands 17.3-17.8 GHz and 18.3-19.3, 19.7-20.2 GHz harmonizing use of these bands with the FCC.

Fixed service operators also note that Ciel was recently awarded 6 new Approvals in Principle by Industry Canada to develop spectrum at the orbital locations listed below. Ciel is seeking customers interested in utilizing any of its satellite capacity through a Call for Interest in the following neighbourhood:

91°W 17/24 GHz BSS Band
91°W Ka FSS Band
103°W 17/24 GHz BSS Band
107.3°W 17/24 GHz BSS Band
109.2°W Ka FSS Band
138°W 12 GHz BSS Band.

In contrast, the FS has been forced to vacate certain spectrum bands to allow for BSS, Intelligent Transportation Services (ITS), PCS and other mobile systems and has been required to accept sharing conditions with low earth orbiting fixed satellite systems.

(b) More specifically, should the designation be as requested in section 3.1 above, namely that the extended-Ku bands 10.95-11.2 GHz and 11.45-11.7 GHz be designated only to the fixed-satellite service, and the bands 10.7-10.95 GHz and 11.2-11.45 GHz continue to be designated to the fixed-satellite and fixed services under the current policy stipulations?

FSS interests are supportive of designating the 10.95-11.2 GHz and 11.45-11.7 GHz for exclusive use by the FSS after a 3-year transition period. Although the FSS has shared co-primary status with the FS in the entire 10.7-11.7 GHz band for several years, there are only about 20 FSS deployments in the entire 11 GHz band, reflecting the impracticality of sharing with the FS. As such, the FSS submits that the 1 GHz of spectrum should be segmented to allow more equitable access to the FSS. In particular, the 10.95-11.2 GHz and 11.45-11.7 GHz portions of the 10.7-11.7 GHz band should be designated for priority use by the FSS. In the United States the extended Ku-band is shared between the FS and FSS with the footnote NG104 applied to the FSS to indicate a requirement to use the bands for international services. However, in the past five years, Echostar, Intelsat and Panamsat (now part of Intelsat) have all requested and been granted waivers of NG104 at various orbital positions to allow ubiquitous FSS services. Intelsat has retained its waivers, indicating an on-going interest in this band for ubiquitous FSS services.

FS interests oppose the re-designation indicating that the band is important for backhaul applications given its combination of low rain propagation conditions and small antenna directivity. Exclusion of the 10.95-11.2 and 11.45-11.7 GHz band from the available FS spectrum would handicap the development of services that are dependent upon the favourable propagation and antenna gain advantages provided by this spectrum. Sharing with non-broadcasting satellite applications is feasible in this band through the use of judicious and cooperative coordination made on a good faith basis. Very often a simple replacement of antenna locations would permit both parties to operate, thus leading to spectrum efficiency. In addition, the industry stresses the harmonization of spectrum use with the United States as an important objective by both FSS and

FS operators. A similar proposal was rejected in the US on several grounds, one of which is the FCC's explicit plan to maintain this band for the FS.

If these designations are made as described in 1(b) above:

2. Should they (a) be for a limited duration, and (b) be made conditional on the bringing into use the extended-Ku bands for DTH services within a specified period of time?

FSS interests indicate that the revised Industry Canada spectrum utilization policy for the 10.7-11.7 GHz band should be established following a three-year transition on a permanent basis and that it should not be limited to any specific orbital positions. The FSS interests suggest that a reasonable bringing into use condition of four years could be considered to ensure the spectrum is utilized for the purposes to which it would be designated. The additional year beyond the three-year transition period would provide for contingencies that can sometimes arise in any satellite project.

FS operators emphasize the need for regulatory stability so that fixed service operators and manufacturers can continue to plan for the orderly development and efficient operation of their networks in response to expected rapid expansion due to the advent of 3G and beyond 3G growth. The status quo for the band should be maintained while other alternatives are being explored. Nevertheless, in response to question 2 (a) if the designations are made as described in 1 (b) above and given that the DTH community have expressed an interim need pending development of the 17/24 GHz technologies, the designation should revert back to the existing shared status after 8 years from the Department's decision. In response to question 2 (b), should the DTH service in the extended-Ku bands remain underutilized within 5 years from the designation, the band designation should revert back to the existing shared status. Given this, the Department is requested to evaluate the situation about 6 months prior to the end of the 5-year period.

3. Comments are sought as to the disposition of the current fixed service licensees in the extended-Ku bands. Should they be permitted to continue operating in these bands and, if so, under what conditions?

FSS interests submit that the 10.95-11.2 GHz and 11.45-11.7 GHz bands should be designated for priority use by the FSS for the provisioning of DTH and broadcast signal delivery services. Three years after issuance of the Department's new spectrum policy to implement the foregoing approach, the operation of FS systems utilizing the bands 10.95-11.2 and 11.45-11.7 GHz should terminate. Until then, any uncoordinated FSS deployment in these bands would be on a no-protection basis with respect to FS transmitters licensed prior to 2009 (i.e. before the moratorium).

FS operators state that existing fixed services should be permitted to continue to operate in these bands. The FS operators do not agree with any transition from the extended-Ku band; however, in the event that the Department elects to amend its policy to limit the use of the extended-Ku bands by the Fixed Service, then a reasonable transition period will be required. Given that the DTH proponents have stated that they will require a minimum of 3 years before they will be capable of utilizing the extended-Ku bands, the Department should establish a transition policy that will provide that, starting from January 2012, fixed stations subject to displacement will be afforded a minimum of a two-year notification period and that displacement will only be required where necessary. Earlier transition to the formal notification date would be at the expense of the DTH service providers. The cost of link migration is more than the capital cost of the affected FS radio equipment. As noted above, non-capital costs would also be incurred by FS operators, including costs related to network planning, link engineering, civil works, network downtime, licensing fees. These costs are significant, and the transition of these FS systems out of the

extended-Ku bands would provide no benefit or return on investment for the affected operators, only increased cost and reduced options for future network design activities.

4. Comments are sought as to whether the future capacity requirements of the fixed service can be accommodated in other fixed service allocations at 6, 15, 18 GHz and the remaining portions of the 11 GHz Ku band. Are these bands suitable and is there sufficient spectrum to accommodate any potentially displaced fixed service systems from the extended-Ku bands?

FSS interests note there are a number of viable alternatives available for FS users currently licensed in the Extended-Ku band. If Industry Canada decides to permit future use of the Extended Ku-band for DTH and broadcast signal delivery services, current FS users in the bands could migrate to these alternatives in an orderly fashion over a 3-year transition period before a new Extended-Ku band satellite would be launched.

FS interests indicate that they expect significant growth in requirements for backhaul services due to the continued growth of PCS and the expected exponential growth due to the advent of 3G and 4G. The 11 GHz band with its favourable propagation properties and antenna size is ideal to meet the challenges of backhauling the traffic. If this band is not available, such capacity would need to be provided in the higher bands, which could require new infrastructure or else such capacity can only be accommodated through the mixed use of other bands. Restricting frequency options in this way results in inefficient network topologies (i.e., link distances vs. frequency) and compound the co-ordination complexity. Since the transmission infrastructure such as antennas, antenna coupling units and waveguides would need to be duplicated, the costs to the service providers would be high. It should also be noted, that this type of re-allocation over the years has eroded the frequency options available to carriers at the same time that the carriers are experiencing exponential growth.

5. Comments are sought on the coordination requirements with fixed systems in the U.S. and coordination with other FSS systems.

FSS interests do not believe that it would be necessary for Industry Canada to seek a new bilateral arrangement to address US FS networks. There are very few FS transmitters in the United States that are sufficiently close to the border and pointing in the direction of the border to cause interference to DTH subscribers in Canada. The FCC issued a Report and Order in September 2007 to allow the FS to use smaller dishes in the band 10.7-11.7 GHz with the anticipation this would increase density in urban or suburban areas; however, the FSS does not anticipate that this ruling will significantly impact the distribution of networks in most border areas. Geometric and geographic conditions are such that very few US FS links could be deployed in such a way that they could negatively impact FSS DTH subscribers. Protection to FS networks in the United States from FSS networks is afforded by ITU Radio Regulations Article 21 power flux-density limits, with which any extended Ku-band satellite must comply. Coordination with other extended-Ku band FSS systems can be undertaken following the normal ITU process.

FS operators note that the FCC has granted FS operators priority use of the allotment and extended-Ku bands with smaller antennas. Because of this decision, the number of 11 GHz FS stations along the US border is expected to increase in the near future. As such it may be difficult to co-ordinate along the border. Since the use of the band will not be harmonized with the US, the extended-Ku bands will not be as fully utilized if re-designated for DTH broadcasting services as they would be if FS systems were to continue using the extended-Ku bands in Canada. The FS is concerned that it would be forced to give up an allocation for a service, which could ultimately not be utilized due to cross-border concerns.

If these designations are not made as described in 1(b) above:

6. Should consideration be given to authorizing the use of the extended-Ku bands to provide DTH services on a non-standard basis (i.e. receive-only earth stations shall not claim protection from harmful interference from any current and future authorized fixed service stations)?

Both the FS and FSS interests indicate that it would not be viable to authorize the use of the Extended-Ku band to provide DTH satellite services on a non-standard basis. The wide distribution of consumer DTH receivers would be geographically unpredictable and, given the expected volume, interference mitigation for individual DTH receivers from FS transmitters would be commercially impractical and unworkable from a consumer perspective. In addition, the user of the non-standard service would necessarily have to be informed of the lack of protection in a manner similar to that required by the FCC in granting waivers from US footnote NG104. Non-standard DTH usage would not work and would only delay development of FS and FSS networks in this band.

7. Comments are sought on how the near-term DTH capacity requirements can be met.

FSS interests argue that it is critically important that DTH consumers be able to access satellite programming that is transmitted in the same range of frequencies and using satellites located in the same orbital neighbourhood. As such, for technology, cost-effectiveness, redundancy and regulatory reasons, the Extended Ku-band is the only viable option for the delivery of new DTH and the broadcast signal delivery services that rely upon the DTH satellite platform. All other FSS and BSS bands are not suitable for reasons of unmarketable dish size (C-band), lack of capacity availability in the required orbital arc (Standard Ku-band and Planned BSS), or inability to meet the near-term requirement due to technological and/or regulatory reasons (Ka-band, 24/17 GHz, V-band, and W-band).

The FS operators have responded to the above questions in good faith based upon an assumption that the Department will respond to absolute demonstration of an immediate and urgent demand by Canadians for more Television channels than they already have, even more so than is evident in the United States. The Department has already made provisions for the orderly growth in demand by making provisions for more spectrum in higher bands. Given this, the FS operators argue that the Extended-Ku band is not currently the only viable option for the delivery of new DTH broadcasting services, but the least costly for the satellite services provider amongst a range of options available to the satellite industry. In particular the use of BSS bands offers a viable alternative. The availability of the technology is demonstrated in the fact that several FSS operators have applied for licences in these bands. While the proposal of the FSS interests is perhaps an efficient way to upgrade viewers' equipment, it is doing so by shifting the economic burden to the current FS users.