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Dawn Hunt
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April 17, 2009

Mr. Leonard St-Aubin
Director General, Telecommunications Policy Branch
Industry Canada
16th Floor
300 Slater Street
Ottawa ON K1A 0C8

Sent via email: wireless@ic.gc.ca

Dear Mr. St-Aubin:

Re: Canada Gazette, Part I, January 10, 2009, Consultation on the Possible Use of the Extended-Ku Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting Services – DGTP-003-08

Rogers Communications Inc. (Rogers) appreciates the opportunity to provide comments on the above-noted consultation.

The documents are being sent in Adobe Acrobat Professional Version 8.0.
Operating System: Microsoft Windows XP.

Yours very truly,

A handwritten signature in black ink, appearing to be "Dawn Hunt", written in a cursive style.

Dawn Hunt
DH/jt

**Comments of Rogers Communications Inc.
(Rogers)**

Canada Gazette Notice No. DGTP-003-08

Consultation Paper on the Possible Use of the Extended-Ku
Spectrum Bands for Broadcasting Services

Published in the Canada Gazette, Part I
January 10, 2009

April 17, 2009

Introduction

1. The Department has issued a consultation paper titled **Consultation Paper on the Possible Use of the Extended-Ku Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting Services – DGTP-003-08** (“the Consultation Paper”). In the Consultation Paper, the Department proposed to make certain designation changes in the band 10.7-11.7 GHz (“the 11 GHz band”) to facilitate DTH services. Specifically, the Department has requested public comments regarding whether the extended-Ku bands 10.95-11.2 GHz and 11.45-11.7 GHz (“the extended-Ku sub-bands”) should be designated only to the fixed-satellite service (“FSS”) such that these bands would be used exclusively for DTH services. Among other things, the 11 GHz band is currently used for fixed service microwave backhaul systems that support cellular and Personal Communications Services (“PCS”) commercial mobile services.
2. Rogers Communications Inc. (“Rogers”) hereby files the following comments in response to the Consultation Paper. Rogers also participated in the development of the Radio Advisory Board of Canada’s (“RABC’s”) response to the Consultation Paper and supports the comments of the fixed service users that are incorporated in the RABC’s response. Rogers also participated in the development of, and fully supports, a separate submission made by certain fixed service providers.
3. At the outset, Rogers would note that it relies heavily on the use of a variety of fixed service spectrum bands, including the 11 GHz band, for microwave backhaul systems that are used in the provision of advanced commercial mobile voice and data services. In fact, Rogers uses microwave backhaul for serving the vast majority of its radio base station sites. It is expected therefore that Rogers’ demand for fixed service spectrum will continue to

grow along with the rapid growth of next generation broadband mobile data services.

4. Rogers is not alone in relying on the use of microwave for its backhaul requirements. In Europe, for example, wireless service providers rely significantly on the use of microwave backhaul. While carriers in the more densely populated US have traditionally relied more heavily on leased copper backhaul, this is rapidly changing in light of the fact that microwave backhaul capacity costs have fallen by up to 75% in recent years, and demand for broadband services is growing exponentially.¹ By using standardized frequency bands, Rogers has access to leading edge technology developed for either the European or North American markets, which means that Rogers is able to benefit from equipment availability and economies of scale. This in turn translates into services that are affordable and of high quality.

5. As of December 31, 2008, Rogers had approximately 8.0 million wireless customers, which represented approximately 37% of the more than 21 million Canadian wireless customers. Rogers' GSM voice service is currently available to approximately 94.8% of the Canadian population. Rogers' next generation wireless data services using Universal Mobile Telephone System/High-Speed Packet Access ("UMTS/HSPA") technology are currently available to over 75.6% of the Canadian population. Rogers' advanced high-speed wireless data services include mobile access to the Internet, wireless e-mail, digital picture and video transmission, mobile video, music downloading, video calling and two-way short messaging service ("SMS").

6. In addition to the extensive rollout of Rogers' advanced high-speed wireless data network, the other significant driver of broadband mobile data usage in Canada is the introduction and popularity of a variety of smartphone consumer devices that support the use of broadband mobile data services

¹ <http://www.infoworld.com/t/networking/backhaul-woes-slow-sprints-wimax-rollout-950>

and applications. Smartphones include revolutionary devices such as Research in Motion's 'Blackberry' and the Apple 'iPhone' which allow business and consumer users to increase their productivity by leveraging the benefits of broadband mobile services while they are on the move. Rogers recently publicly disclosed that smartphone devices comprised 50% of its mobile device upgrades in the fourth quarter 2008.

7. As the popularity of smartphone devices grows, mobile data usage will explode. A recent and widely reported study regarding mobile data trends noted that the popular iPhone smartphone device typically generates 30 times the mobile data traffic of a basic-feature mobile phone and that lap-tops equipped with a 3.5G modem will generate 450 times the traffic of a basic mobile phone.² It is not surprising therefore that mobile data traffic is currently forecast to double every year between 2009 and 2013.³
8. In light of these developments, it is clear that wireless service providers such as Rogers must expand their backhaul facilities to support these burgeoning services and critical enablers. Although the use of fibre-optic systems is an important option for providing additional backhaul capacity, the use of microwave transmission will continue to be the preferred option in many cases.
9. For example, while fibre may be an economic alternative in some locations, it is a less attractive alternative than microwave in other locations for a number of reasons. First, since the geographic location of cellular and PCS radio base stations is determined by factors such as coverage, capacity and land-use issues, base stations are not necessarily located where fibre is available. This is especially true in circumstances where base stations are located on

² Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, January 29, 2009. http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf

³ Ibid.

residential buildings, industrial or agricultural lands, and in urban areas that are located outside the footprint of Rogers' Cable network. Second, microwave is generally a less costly alternative compared to fibre outside urban areas, and the cost of microwave capacity has fallen significantly in recent years. Third, microwave backhaul systems can often be deployed more quickly than fibre-optic systems and therefore they permit wireless service providers such as Rogers to swiftly add or augment backhaul capacity that may be required to support additional coverage or capacity that is necessary to maintain the high quality of service that Rogers provides to its customers. For these reasons, Rogers and other wireless service providers will continue to heavily rely on microwave for their backhaul requirements.

10. It is also important for the Department to remember that wireless service providers need access to a variety of fixed service spectrum bands, much like a builder requires a variety of tools in the tool box. In other words, each spectrum band has unique characteristics that address a different need. Lower frequency bands are less susceptible to path loss and allow for longer link distances. Higher frequency bands can only be used for much shorter link distances. Bands such as the 11 GHz band are used to support link distances that are in the middle of the two extremes.

11. More specifically, link distances associated with main backhaul routes to rural "hub" sites are relatively long, which means that lower microwave frequency bands must be used. Distances between rural "hub" and "spur" sites are shorter and can be served using mid-range bands, such as the 11 GHz band. On the other hand, the distances between urban "hub" and "spur" sites tend to be relatively short, which means that higher frequency bands can be used, such as, for example, the 18 GHz, 23 GHz and 38 GHz bands. Link distances associated with main backhaul routes feeding urban and suburban "hub" sites tend to be longer, which means that mid-range frequency bands, such as the 11 GHz band, are required for these links.

12. Rogers is concerned with the Department's proposal to limit the extent to which the 11 GHz band may be used for fixed service microwave backhaul systems since this band is one of a few bands that are available to efficiently address mid-range link distances. Rogers' concern is compounded by the fact that, in a separate consultation paper, the Department has proposed to limit the extent to which the 15 GHz band may be used by the fixed service.⁴ Like the 11 GHz band, the 15 GHz band is used to serve mid-range link distances.
13. If adopted, the Department's proposals will have the effect of creating a void in the microwave options that are available to wireless service providers for mid-range, medium and high capacity back-haul links. While spectrum in the 10 GHz band is available for fixed service backhaul systems, and can be used for mid-range link distances, these systems are currently limited to a maximum capacity of 16 DS1s which is not adequate for supporting the mobile broadband services outlined above. The 15 GHz and 11 GHz bands currently support a much higher maximum capacity of, for example, DS3 and 3 DS3 and yet it is with respect to these spectrum bands that the Department is currently proposing to limit the fixed service.
14. Apart from creating a void, the proposed displacement of fixed service microwave backhaul systems from the extended-Ku sub-bands in the 11 GHz band will be costly. Rogers alone has dozens of microwave links in the extended-Ku sub-bands. In total, there are hundreds of fixed service links in these sub-bands. Given the average capital cost per microwave link, the cost of displacing Rogers' links could be in the order of millions of dollars. Added to this is the cost associated with engineering and installing new links and the fact that scarce engineering and technical resources will need to be devoted

⁴ Consultation Paper on Using a Portion of the Band 14.5-15.35 GHz for Tactical Common Data Link (TCDL) Systems (DGTP-004-08), December 2008.

to replacing existing microwave backhaul links instead of implementing advanced new services and enhancing coverage.

15. Restricting fixed service users to the remaining portion of the 11 GHz band will also result in the premature congestion of this spectrum. It is important to note in this regard that well over 1,000 fixed service links are at risk of being displaced from part of the 15 GHz band. If these links cannot be accommodated in the remaining fixed service spectrum in the 15 GHz band, some of these links will necessarily need to be accommodated in the 11 GHz band which, as noted above, is suitable for mid-range link distances similar to the 15 GHz band.

16. Rogers believes that limiting the fixed service in the 11 GHz band would be a mistake. For the reasons outlined above, the continued use of this spectrum band for fixed service backhaul systems in support of mobile services would be consistent with the objectives of Canadian telecommunications policy which, among other things, are intended “to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions in Canada”.⁵ It would also be consistent with Section 5(1) of the *Radiocommunication Act* which provides for “the orderly establishment or modification of radio stations and the orderly development and efficient operation of radiocommunication in Canada”.

17. Accordingly, as outlined in greater detail below, Rogers opposes the proposed designation of the extended-Ku sub-bands for the exclusive use of FSS for DTH services. There are other options available for the provision of these services and DTH proponents must not be permitted to shift the economic burden associated with their future capacity requirements onto the backs of incumbent fixed service users by displacing them from the extended-Ku sub-bands.

⁵ *Telecommunications Act*, Section 7(b).

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.

18. Given that the 11 GHz band is required for microwave backhaul systems in support of mobile voice and broadband mobile data services, Rogers submits that the Department should not modify the spectrum utilization policy for the 11 GHz band to accommodate the provisioning of DTH services. The current policy balances the requirements of FSS and fixed service systems and ensures their compatibility by limiting FSS earth stations to non-ubiquitous deployments. The policy also provides for the implementation of FSS earth stations only when practicable measures are taken to facilitate the continued introduction of fixed service systems in the 11 GHz band, particularly near urban centers.

19. It is important to note that the Department established this policy, in part, because of the fact that the 11 GHz band was identified in two previous proceedings as being the possible home for fixed service microwave backhaul systems that would be displaced from the 2 GHz band. The Department should not now modify its policy such that some fixed service systems will potentially need to be displaced once again.

20. FSS DTH proponents have other options available to them and they should not be permitted to shift the economic burden associated with their future capacity requirements onto the backs of incumbent fixed service users by forcing the displacement of fixed service systems from the extended-Ku sub-bands.

(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?

21. The Department should not designate the extended-Ku sub-bands for the exclusive use of FSS DTH services.
22. As noted above, the 11 GHz band is an important option for wireless service providers and it is a particularly ideal choice for mid-range backhaul links since it is less susceptible to rain attenuation than other fixed service bands, such as the 15 GHz and 18 GHz bands. The importance of the 11 GHz band for backhaul is only magnified by the explosive growth of broadband mobile data services and the potential displacement of over 1,000 fixed service backhaul links from the 15 GHz band.
23. By continuing to allow fixed service backhaul systems throughout the 11 GHz band, the Department would be acting in a manner that is consistent with the actions of the US Federal Communications Commission (“FCC”) which has sought to protect the operation and expansion of fixed service microwave backhaul systems within the band. As noted above, harmonizing Canadian fixed service frequency bands with major markets such as the US provides Canadian fixed service users with access to readily available, leading edge technology and economies of scale. This translates into services that are affordable and of high quality.

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?

24. Rogers is opposed to the proposed designations, even if they will only be put into effect for a limited duration. The displacement of fixed service systems will be costly and disruptive irrespective of whether the proposed designations

will be temporary or permanent. Moreover, subjecting fixed service systems to ongoing disruption and repeated displacement would not be consistent with Section 5(1) of the *Radiocommunication Act* which provides for “the orderly establishment or modification of radio stations and the orderly development and efficient operation of radiocommunication in Canada”. As noted above, the 11 GHz band was previously identified as the possible home of fixed service backhaul systems that were displaced from the 2 GHz band.

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?

25. As noted above, the 11 GHz band is an important option for fixed service microwave backhaul, especially in light of the explosive growth of broadband mobile data services and the potential displacement of over 1,000 fixed service links from the 15 GHz band. Fixed service systems should continue to be permitted to operate within the extended-Ku sub-bands and the Department should continue to limit FSS earth stations to non-ubiquitous deployments.

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 Consultation Paper on the Possible Use of the Extended-Ku Spectrum Bands for Direct-to-Home (DTH) Satellite Broadcasting Services DGTP-003-08 6 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?

26. As noted already, the Department is considering in a separate consultation the potential displacement of over 1,000 fixed service backhaul links from part of the 15 GHz band. If the Department elects to limit the use of the 15 GHz band by the fixed service, only half of the currently available spectrum in that band will be available for fixed service systems in the future. This means that

the 15 GHz band will be an unlikely alternative for fixed systems displaced from the extended-Ku sub-bands.

27. The 11 GHz band is less susceptible to rain attenuation than the 15 GHz and 18 GHz bands, which means that these two bands are not direct substitutes for the 11 GHz band. In any event, there is a moratorium on fixed service systems in the 18 GHz band and some of the fixed service systems in this band may need to relocate to the 15 GHz or 11 GHz bands after 2014.

28. It is also important to remember that the 11 GHz band provides for the use of smaller antennas than the 6 GHz band, which is an important consideration in an environment where the installation of radio antennas is becoming increasingly difficult due to aesthetic and community concerns, especially in urban and sub-urban areas.

29. In light of the above, there are currently no practical alternatives to the use of the 11 GHz band for fixed service backhaul systems.

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

30. As noted already, the US FCC has taken action to protect and encourage the operation and expansion of fixed service systems in the 11 GHz band in the US. The continued use of the entire band by fixed services in Canada would maintain the harmonization of this band with the US. This would provide for straightforward cross-border coordination and more efficient use of the band than will be possible if non-harmonized FSS DTH services are permitted in the band in Canada. Since the proposed designation of the band for FSS DTH would not be harmonized with the US, coordination between US fixed service systems and Canadian DTH services near the border will likely be difficult.

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)?

31. Rogers does not support the proposal to accommodate DTH services in the 11 GHz band by designating the extended-Ku sub-bands for the exclusive use of FSS. If the Department considers that DTH services should be permitted in the extended-Ku sub-bands, Rogers respectfully submits that they should only be accommodated on a non-standard basis, whereby they will not claim protection from harmful interference from any current and future authorized fixed service stations.

32. Rogers notes that this would be consistent with the approach taken by the US FCC. Rogers submits that the Department should similarly require that DTH service providers inform their customers in writing of the potential for interference from fixed service operations.

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

33. Rogers agrees with the detailed comments of the fixed service users in the RABC's response and the Fixed Service Providers' submission, that the near-term (e.g. 3-year) DTH capacity requirements can be satisfied through the use of other options that are either already available, or will be available in the near term.

34. By ignoring these options, and requesting the exclusive use of the extended-Ku sub-bands, the DTH proponents are transparently attempting to shift the economic burden associated with their future capacity requirements onto the backs of the incumbent fixed service users in the 11 GHz band, by requiring the displacement of fixed service systems from the extended-Ku sub-bands.

35. Rogers submits that the Department should not allow the DTH proponents to impose the burden of their future requirements on incumbent fixed service users. Clearly, shifting costs in this manner would be unfair and unreasonable.

Conclusion

36. As outlined above, Rogers relies heavily on the use of a variety of fixed service spectrum bands, including the 11 GHz band, for microwave backhaul systems that are used in the provision of advanced commercial mobile voice and broadband mobile data services. Since Rogers uses microwave backhaul for serving the vast majority of its radio base station sites, it is expected that Rogers' demand for fixed service spectrum will continue to grow along with the rapid growth of next generation broadband mobile data services.

37. Rogers is concerned with the proposed displacement of fixed service microwave backhaul systems from the extended-Ku sub-bands at the same time that the Department is also proposing to limit the use of portions of the 15 GHz band by fixed service microwave backhaul systems. These bands are required for the provision of mid-range backhaul links and limiting the use of fixed services in these bands will create a void in the options available to fixed service users.

38. Rogers therefore opposes the proposed designation of the extended-Ku sub-bands for the exclusive use of FSS for DTH services. There are other options available for the provision of these services and DTH proponents must not be permitted to shift the economic burden associated with their future capacity requirements onto the backs of incumbent fixed service users.

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