

ABRIDGED VERSION

VIA E-MAIL

24 March 2017

Spectrum Management and Telecommunications
Innovation, Science and Economic Development Canada
e-mail: ic.spectrumengineering-genieduspectre.ic@canada.ca

Re: Gazette Notice SMSE-002-17 – Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the 5150-5250 MHz Frequency Band – Cogeco Comments

In accordance with the procedures set out in the above-noted consultation, please find attached the comments of Cogeco Communications Inc. (“Cogeco”).

Cogeco is filing certain information contained in this submission in confidence with the Department because it is of a commercially sensitive nature and has consistently been treated by Cogeco in a confidential manner. Cogeco claims full protection for the information that has been designated as confidential in this submission under the *Access to Information Act*. Public disclosure of this information could reasonably be expected to result in material financial loss to Cogeco and prejudice its competitive position in the market. As such, Cogeco respectfully requests that the Department refuse all claims and resist all challenges made under the *Access to Information Act* which seek public disclosure of the information that has been designated as confidential in this submission. An abridged version is provided for the public record.

We thank you for the opportunity to provide comments and remain available to answer any questions you may have regarding our submission.

Yours very truly,

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c.c.: **Nathalie Dorval**, VP Regulatory Affairs and Copyright, Cogeco Inc.
Luc Noiseux, Chief Technology and Strategy Officer, Cogeco Inc.
Philippe Perron, Director, Technology Strategy, Cogeco Communications Inc.

**Consultation on the Technical and Policy Framework
for Radio Local Area Network Devices
Operating in the Band 5150-5250 MHz**

***Canada Gazette, Part I, January 28, 2017,
Notice No. SMSE-002-17***

**Comments of
Cogeco Communications Inc.**

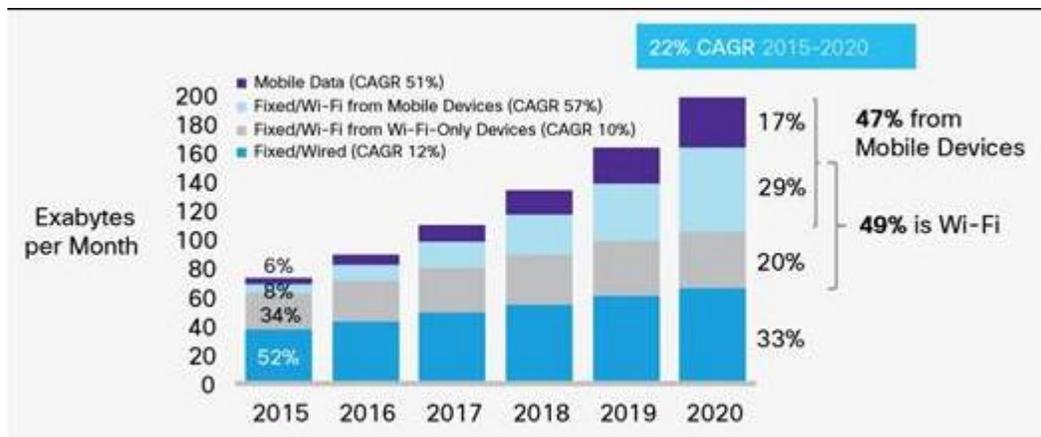
24 March 2017

Introduction

1. These comments are submitted by Cogeco Communications Inc. (“Cogeco”) in connection with the proceeding initiated by the Department of Innovation, Science & Economic Development (“ISED” or the “Department”) in *Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the Band 5150-5250 MHz, Canada Gazette, Part I, January 28, 2017, Notice No. SMSE-002-17* (“SMSE-002-17”).
2. Cogeco is a Canadian owned and controlled communications corporation. It is the 8th largest cable operator in North America, operating in Canada under the “Cogeco Connexion” name in Québec and Ontario, and in the United States under the “Atlantic Broadband” name in western Pennsylvania, south Florida, Maryland/Delaware, South Carolina and eastern Connecticut. Cogeco provides residential and business customers with video, Internet and telephony services through a two-way broadband fibre network as well as through a rapidly expanding Wi-Fi network which currently consists of 1,800 hotspots located throughout southern Ontario and Québec. Through its subsidiary Cogeco Peer 1, Cogeco provides its business customers with a suite of information technology services (colocation, network connectivity, hosting, cloud and managed services), through 16 data centres, an extensive FastFiber Network® and more than 50 points of presence in North America and Europe.
3. Cogeco’s interest in this proceeding stems from its belief that Wi-Fi connectivity is essential to Canadians, to Canada’s economy and to our national digital infrastructure. Over the last few years, Wi-Fi has become the primary connectivity mechanism for Canadians allowing our citizens to leverage the internet and the digital world. All of the available evidence demonstrates that Wi-Fi will continue to be the predominant technology to connect to the internet. For example, Cisco predicts that by 2020, Wi-Fi traffic from both mobile devices and Wi-Fi-only devices will account for

almost half (49 percent) of total IP traffic by 2020, up from 42 percent in 2015 (Figure 23).¹

Figure 1 - IP Traffic by Access Technology



4. Because of its importance to Canadians and our economy, Cogeco strongly supports any initiatives that can improve the Wi-Fi experience of our customers, including the introduction of rules that authorize the operation of higher power indoor and outdoor RLAN devices (“HPODs”) in Canada so that our customers can enjoy gigabit Internet speeds, regardless of whether they are connected to Cogeco’s network via Wi-Fi or a wireline connection.

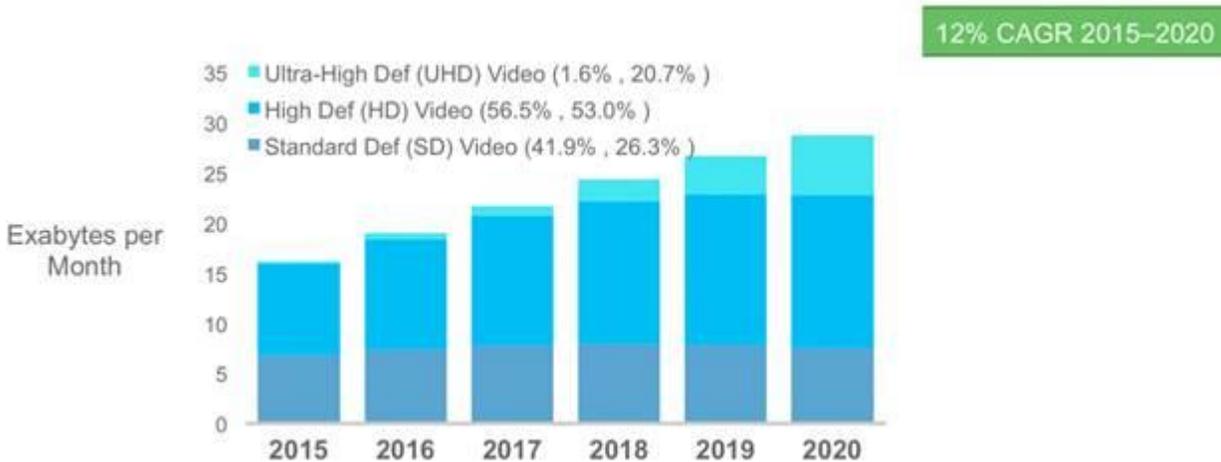
5. As discussed more fully below, the existing spectrum available for unlicensed use in Canada in the 2.4 and 5 GHz bands is not capable of handling the new Wi-Fi standard of 802.11ac, which requires much wider channels than those authorized under RSS-247. In addition to this concern is the fact that the 2.4 GHz band is now fully saturated, experiencing heavy congestion from a variety of uses, and the 5 GHz band will soon experience the same problems, particularly as a result of video traffic, which accounts for the largest use of unlicensed spectrum.

6. Hereinafter, Cogeco provides its comments on each of the three points set out in SMSE-002-17.

¹ <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html>

A. The demand for and benefit, if any, of allowing HPODs in the 5150-5250 MHz frequency band before WRC-19.

7. As noted above, almost half of all IP traffic will be carried on a Wi-Fi connection by 2020, representing almost 100 Exabytes per month on a global basis. This tremendous demand for Wi-Fi spectrum is being fueled by a wide variety of devices (laptops, tablets, smartphones, and Ultra 4K HD TVs incorporating smart TV technology) and an even wider array of bandwidth-intensive applications, the most significant of which is video and online gaming.
8. According to Cisco, by the year 2020, 82% of all IP traffic will be video, up from 70 percent in 2015.² On a global basis, IP video traffic will grow threefold from 2015 to 2020, a CAGR of 26 percent and Internet video traffic will grow fourfold from 2015 to 2020, a CAGR of 31 percent³
9. Cisco also points out that the introduction of HDTV and ultra-high definition (“UHD”), or 4K TV, has a significant impact on data consumption.

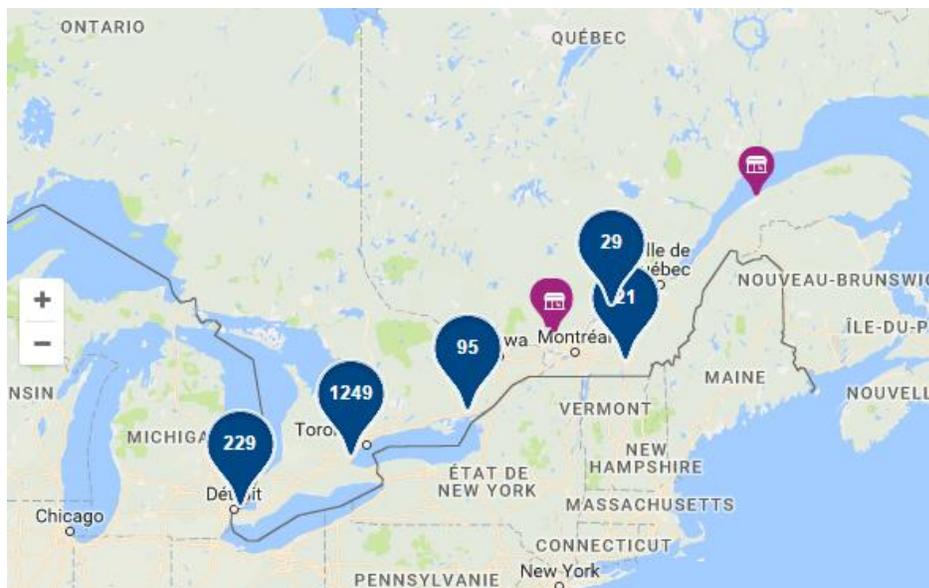


² Cisco, *The Zettabyte Era – Trends and Analysis*, available online at: <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html>

³ Cisco, *Ibid.*

10. For example, an Internet-enabled HD television that draws 45 minutes of content per day from the Internet generates as much Internet traffic as an entire household today.⁴ However, “because the bit rate for 4K video at about 18 Mbps is more than double the HD video bit rate and nine times more than standard-definition (SD) video bit rate...[W]e estimate that by 2020, 40 percent of the installed flat-panel TV sets will be UHD, up from 8 percent in 2015... and that UHD (or 4K) IP VoD will account for 21 percent of global VoD traffic in 2020.”⁵
11. Cogeco has witnessed this explosion in demand for data and Wi-Fi spectrum first hand. As noted above, Cogeco has deployed and operates a Wi-Fi network with more than 1800 hotspots in Ontario and Québec – a network which continues to grow on a daily basis.

Figure 2 – Cogeco Connexion: Wi-Fi Hot Spots in Ontario and Québec⁶



⁴ *Ibid.*

⁵ Cisco VNI Global IP Traffic Forecast, 2015-2020, *supra* note 1.

⁶ This interactive map is available online at:
<https://www.cogeco.ca/web/on/en/residential/internet/wi-fi-hotspots>

12. Cogeco's network of Wi-Fi hot spots is available to all of our Internet subscribers for free and on an unlimited usage basis. In addition, and since the beginning of 2016, once a Cogeco subscriber has logged in to our Wi-Fi network, the subscriber's device will connect automatically to the Wi-Fi network on a going forward basis - a feature of Hotspot 2.0 Technology - which allows our subscribers to save on mobile wireless data charges.

13. As a result of these developments and, as illustrated in Figures 3 and 4 below, usage on Cogeco's Wi-Fi network surged in 2016, both in terms of the number of devices connected to the network (an increase of more than ###) as well as network sessions (an increase of more than ##).

Figure 3 – Cogeco Connexion Hot Spot Network Usage (Devices)

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Figure 4 – Cogeco Connexion Hot Spot Network Usage (Sessions)

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14. As indicated above, the largest and fastest growing use of unlicensed Wi-Fi spectrum is for video applications, including online streaming video services such as Netflix. Cogeco has built its wireline network to keep pace with this demand, incorporating gigabit Internet speeds, but its Wi-Fi network cannot match those speeds if it cannot activate 802.11ac technology in the network. Likewise, as long as the indoor use of HPODs is prohibited in Canada, Cogeco's customers will likely not be able to experience these speeds with their Internet routers.
15. It also important to point out that it is not possible to shift this demand to the 2.4 GHz band because the spectrum in that band is completely congested. Moreover, the current channels in the 5 GHz band will soon become congested if the growth and pace of video consumption continues on its current course. In addition, the channels in that band do not currently accommodate the 802.11ac standard.
16. The main solution that is capable of addressing these problems is to authorize the use of HPODs in Canada, consistent with the approach

- taken by the Federal Communications Commission (“FCC”) in the United States. The rules in the United States were liberalized two years ago and there are now several hundred devices available to both consumers and service providers in that market which are compliant with the 802.11ac standard. As a result, our neighbours to the south are enjoying faster Internet speeds, less congestion in unlicensed Wi-Fi bands and higher levels of network reliability overall.
17. The government of Canada should not force its citizens to wait until the outcome of WRC-19 before they can enjoy these network benefits and take advantage of the additional capabilities that are made possible by the 802.11ac standard. A key component of the Department’s innovation agenda is to enhance Canada’s innovation performance, and to make Canadian firms more productive and competitive in the knowledge-based economy.⁷ We cannot accomplish this goal if our digital infrastructure does not match the capabilities of our largest trading partner. This would place Canada at a competitive disadvantage relative to the United States and reduce the number and types of Wi-Fi-enabled devices that can be sold in the market in Canada, thereby disrupting the North American-wide ecosystem of devices that Canadians currently enjoy.
18. Waiting until after WRC-19 is over to authorize HPOD use in Canada will only delay these benefits further and, in fact, could have the perverse effect of stimulating the sale and importation of these devices in Canada on a “grey” or black market basis. This would result in increased administrative costs for both the Department and the Canadian Border Services Agency.
19. Accordingly, Cogeco supports the adoption of rules by the Department that would authorize the operation of HPODs in Canada prior to WRC-19.

7 ISED, 2016–17 Report on Plans and Priorities, available online at:
[https://www.ic.gc.ca/eic/site/017.nsf/vwapj/ISED_2016-17_RPP-eng.pdf/\\$file/ISED_2016-17_RPP-eng.pdf](https://www.ic.gc.ca/eic/site/017.nsf/vwapj/ISED_2016-17_RPP-eng.pdf/$file/ISED_2016-17_RPP-eng.pdf)

B. The potential impacts on domestic and foreign satellite systems in the 5150-5250 MHz frequency band of authorizing HPODs use prior to WRC-19 on the basis of a maximum e.i.r.p. of 4 W. Requirements for an elevation mask towards satellites and an exclusion zone of 25 km around receiving earth stations to protect all satellite systems would likely also apply.

20. Cogeco is not aware of any complaints that have been made to the FCC regarding interference to satellite operations as a result of its decision to change the technical rules for HPODs in the United States. This is likely because the FCC has established effective interference mitigation measures such as limiting RLAN emissions to 125 mW above an elevation angle of 30°. The FCC has also established rules which require service providers with large scale HPOD deployments to register with Commission so that complaints regarding interference can be handled quickly.
21. With respect to a 25 km exclusion zone for receiving earth stations, Cogeco understands that there is only one such receiving earth station in Canada at the present time and that this station appears to be listed in the Department's Spectrum Management System as "transportable". If this is the case, perhaps the earth station can be moved to a location that is less densely populated than the Ottawa/Gatineau area.
22. One way or the other, the operation of HPODs in Canada would only be authorized for use on a no protection non-interference basis in order to ensure that parties with priority use in the band can take steps to effectively protect their operations from harmful interference. This approach to HPODs will ensure that Canada remains compliant with its obligations as a member of the International Telecommunication Union ("ITU") and will also place the onus on the operators of HPODs to demonstrate why their devices do not cause harmful interference to satellite operations in the band.

C. Should the Department proceed to authorize HPODs use prior to WRC-19, what regulatory approach would best ensure a balance of timely deployment and the protection of other existing and future services in the 5150-5250 MHz frequency band? Also, indicate any and all considerations that should be given to equipment standards, technical requirements, eligibility criteria and/or conditions of licence depending on the relevant approach.

23. Because the base of HPOD devices that are used by Cogeco and other Canadian carriers comes from vendors that have built their equipment for the US market, it would be preferable that the rules for these devices in Canada be as similar as possible to those established by the FCC.
24. For this reason, Cogeco supports the adoption of a “licence exempt” approach to the authorization of HPODs in Canada, similar to the approach taken by the FCC. This approach ensures that the certification of HPODs in Canada is managed in an administratively efficient fashion, while at the same time safeguarding the operations of incumbent users in the band through enhanced interference mitigation measures, including elevation mask requirements, and the registration of large scale HPOD deployments with the Department.
25. Having said that, and at this point in time, the most critical consideration for Cogeco regarding the use of HPODs in its network is to ensure that they are authorized for use in Canada with the least delay as possible. Therefore, if the Department concludes that the quickest means of authorizing these devices is through the adoption of a “licensing” approach as described in SMSE-002-17, Cogeco would not object to this approach, provided that it is not overly burdensome for those parties seeking licences. For example, HPOD operators should not be required to register every HPOD unit that they intend to use or deploy. Instead, they should be issued a single licence that allows them to operate as many HPODs as they require in a given service area, subject to a standard set of licence conditions and interference mitigation measures that are applied universally across all HPOD licence holders.

26. Cogeco does not believe that the Department should establish an upper limit on the number of HPODs that can be operated by a given party provided that they operate their devices in accordance with the interference mitigation rules that have been established by the Department which should mirror the FCC's rules. However, HPOD operators could be required to provide the Department with a confidential estimate of the number of devices that they intend to deploy as well as the geographic boundaries of the operating areas in where they intend to deploy the devices.
27. The indoor use of HPOD devices does not present the types of interference concerns that are raised by outdoor use. Therefore, parties that wish to use these devices on an indoor basis should not be required to obtain a licence from the Department.
28. Regardless of the final approach chosen by the Department to the authorization of HPODs in Canada, the administrative and operational burdens of implementing the approach should not exceed the benefits of the approach. While Cogeco favours the approach adopted by the FCC, if it is not possible to implement this approach expeditiously in Canada, it would not object to the "streamlined" licensing approach described above.

Conclusion

29. Cogeco thanks the Department for the opportunity to submit comments in this proceeding and urges the Department, once again, to move quickly in authorizing the use of HPODs in Canada prior to WRC-19.

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