

Consultation on the Technical and Policy
Framework for Radio Local Area Network
Devices Operating in the 5150-5250 MHz
Frequency Band
(SMSE-002-17)

Comments of
Ericsson Canada Inc.

March 28th, 2017

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Sent by email to: ic.spectrumengineering-genieduspectre.ic@canada.ca

Cc:

Mr. Martin Proulx
Director General, Engineering, Planning and Standards Branch
Innovation, Science and Economic Development Canada
235 Queen Street,
Ottawa, Ontario K1A 0H5

RE: Canada Gazette, Part 1, January 28, 2017, Notice No. SMSE-002-17 — Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the 5150-5250 MHz Frequency Band

Please find attached the comments of Ericsson Canada Inc. in response to the above-mentioned Canada Gazette, Part 1, dated January 28, 2017, titled “Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the 5150-5250 MHz Frequency Band” and numbered SMSE-002-17 (“Consultation”).

The document is being sent in Adobe Acrobat X Pro Version 10.0.0, using operating system Microsoft Windows 7.

We appreciate the opportunity to provide comments and as always, we are ready to work with to Innovation, Science and Economic Development Canada in the future on this very important topic.

Sincerely,

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INTRODUCTION

Ericsson appreciates the opportunity to respond to the *Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the 5150-5250 MHz Frequency Band* (the “Consultation”). Ericsson would like to commend Innovation, Science and Economic Development Canada (the “Department”) for inviting industry to comment on this important issue: finding technical solutions to efficiently use valuable spectrum in the 5150-5250 MHz band, while protecting incumbent satellite users from interference. Efficiently utilizing spectrum is also instrumental for Canada’s Innovation agenda initiatives to get Canadians connected, such as the “Connect to Innovate” program.¹

Ericsson is a global leader in delivering ICT solutions. In fact, 40% of the world's mobile traffic is carried over Ericsson networks. We have customers in over 180 countries and offer comprehensive industry solutions ranging from cloud services and mobile broadband to network design and optimization.

Our services, software and infrastructure - especially in mobility, broadband and the cloud - are enabling the communications industry and other sectors to do better business, increase efficiency, improve user experience and capture new opportunities.

Ericsson has one of the industry's strongest patent portfolios with a total count of over 42,000 granted patents. R&D is at the heart of our business and approximately 23,700 employees are dedicated to our R&D activities. This commitment to R&D allows us to drive forward our vision for a Networked Society - one where everyone and everything is connected in real time - enabling new ways to collaborate, share and get informed.

¹ <https://www.canada.ca/en/innovation-science-economic-development/programs/computer-internet-access.html>

Over the past 140 years, Ericsson has been at the forefront of communications technology. Today, we are committed to maximizing customer value by continuously evolving our business portfolio and leading the ICT industry.²

In Canada, Ericsson has operated since 1953 and serves Canadian operators, enterprises and media companies by providing complete communication solutions, including mobile and fixed network infrastructure, professional services, software, broadband and multimedia solutions.³

As one of Canada's ten largest Research and Development (R&D) investors, Ericsson Canada invested more than \$315 million CAD in R&D in 2016 and nearly \$5 Billion CAD over the last 10 years. Ericsson has more than 3,200 employees and offices across Canada, including Toronto, Ottawa, and Montreal, where Ericsson fulfills worldwide mandates in the development, testing and support of wireless networks and advanced end-user multimedia services.

Our overall response to the consultation is that Ericsson supports Canada harmonizing with the FCC's rules for High Power Outdoor Devices (HPODs) prior to WRC-19. Below are Ericsson's detailed responses and additional information pertinent to the Consultation.

² Ericsson website: www.ericsson.com

³ Ericsson Canada website: <http://www.ericsson.com/ca/>

COMMENTS ON SPECIFIC SECTIONS

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

Demand for mobile data has been growing exponential and that trend will likely accelerate with the introduction of 5G, which will enable even higher data rates, lower latency and more robust connectivity.

Future growth in data demand is driven by new applications, new services, and use cases that are not yet even foreseeable. This growth will also be fuelled by the shift of many services and markets, especially enterprises, from fixed to mobile broadband. Increased usage of capacity-hungry applications such as video streaming and live streaming will also spur growth.

In fact, Ericsson's own study, presented in the November 2016 issue of the Ericsson Mobility Report, shows that in 2022, North America will still be the region with the highest monthly data usage with 25 GB per month per user.⁴ *"Factors that will drive usage include an increase in the number of LTE subscriptions, improved device capabilities and more attractive data plans, as well as an increase in data-intensive applications"*. In addition, approximately seventy-five percent of the data traffic will be for video related applications.⁵ Based on consumer interest, the proportion of smartphone users in the US using live streaming apps, such as Facebook Live, Periscope and Bambuser, is likely to triple in coming years.⁶

Ericsson concurs with the Department's view on the important role of license-exempted spectrum for the mobile broadband industry to supplement capacity in specially targeted areas, which either lack available licensed spectrum such as highly populated areas or lack of coverage because of obstruction include indoor areas that limit the use of licensed spectrum. As stated in

⁴ Page 12, 2nd paragraph, Ericsson Mobility Report, November 2016 - <https://www.ericsson.com/mobility-report>

⁵ Page 14, 1st paragraph, Ericsson Mobility Report, November 2016 - <https://www.ericsson.com/mobility-report>

⁶ Page 22, 2nd paragraph, Ericsson Mobility Report, November 2016 - <https://www.ericsson.com/mobility-report>

the Department's consultation, to accommodate increased commercial broadband traffic
“...service providers are also deploying Wi-Fi hot spots to off-load some of the traffic from their commercial broadband networks. The proliferation of these devices and the need to off-load broadband traffic are expected to continue in the coming years”⁷

Furthermore, it is well known that the need to off-load broadband traffic is more pronounced in more populated areas. This exact condition manifests in every country regardless of the country's size or total population. Therefore, whether a downtown location is in the US or in Canada, as long as there is a similar number of wireless broadband users, the demand is similar.

The Department also noted that, “[t]oday, the most commonly known RLAN devices in use are consumer Wi-Fi products, which are based on the Institute of Electrical and Electronics Engineers (IEEE) 802.11 family of standards. These standards continually evolve to improve data rates and capacity. In the future, RLAN devices may be based on other types of technology and standards.”⁸

In fact, new types of RLAN technology and standards have *already* emerged with the introduction of LTE-U⁹ and similar technologies such as LAA.¹⁰ With LTE-U/LAA, wireless service providers now have options other than Wi-Fi to off-load traffic from commercial wireless broadband networks.

In a recent speech at the Carnegie Mellon University's Software Engineering Institute on March 15th, 2017, FCC Chairman Pai recognized the benefits of LTE-U, noting that the FCC has “authorized the first-ever LTE-unlicensed (LTE-U) devices in the 5 GHz band—a significant advance for wireless innovation and spectrum sharing. This means wireless consumers will get

⁷ Paragraph 20 of the consultation

⁸ Paragraph 6 of the consultation

⁹ <http://www.lteuforum.org/>

¹⁰ <https://www.ericsson.com/ourportfolio/telecom-operators/license-assisted-access?nav=marketcategory002>

to enjoy the best of both worlds: a more robust, seamless experience when their devices are using cellular networks and the continued enjoyment of Wi-Fi, one of the most creative uses of spectrum in history.”¹¹

Considering the rapidly changing market, consumer behaviour and demands, and changing technologies, any further delay in harmonizing with the FCC will disadvantage Canadian consumers and companies compared to those in the US - which already benefit from a three-year head-start as the FCC released a Report and Order on this issue on March 31, 2014.¹²

In addition, with the world’s longest land border and the tight trade environment between Canada and the US, it is far better to have a proactive approach to dealing with emerging technologies and products from the US rather than to have an ad-hoc and reactive approach when facing new, innovative technologies and products.

Adopting the FCC rules would not only permit HPODs to access the 100 MHz of spectrum between 5150 – 5120 MHz that they currently cannot, but would also allow Canadian consumers and industry to leverage and participate in the equipment ecosystem initially created for the US market.

Ericsson encourages the Department to recognize the demand for and benefits of allowing HPODs in the 5150-5250 MHz frequency band before WRC-19 and to modify the Canadian technical rules in 5150-5250 MHz to harmonize with the ones adopted by the FCC in 2014.

¹¹ https://apps.fcc.gov/edocs_public/attachmatch/DOC-343903A1.pdf

¹² https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-30A1.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.

Current data indicates that thousands of devices have been certified¹³ and millions of access points have been deployed in the US based on the FCC's rules. Neither US nor Canadian regulatory bodies have received any report of harmful interference caused by these HPODs to domestic or foreign satellite incumbent users. It is clear that the FCC's current rules for HPODs are effective in protecting satellite uplink systems in the US and Canada from harmful interference.

Ericsson agrees with the Department on the importance of protecting current and future earth stations, from interference and with the Department's view that an exclusion zone would not have a significant impact on the deployment of HPODs because of the small number of earth stations expected to be deployed¹⁴. However, Ericsson is concerned that, depending the location of the earth station relative to populated areas, an exclusion zone of 25 km could prohibit a large population of users from accessing to wireless broadband provided with HPODs. In the absence of further studying, an exclusion zone of 25 Km as proposed by ISED could be used. However, in the mean time, Ericsson encourages the Department to consider all factors, including but not limited to location, terrain, surrounding conditions etc. in the calculation of the required shape and size of an exclusion zone for a specific earth station. The purpose is to ensure earth stations are well protected from interferences with smallest possible exclusion zones, consequently maximize the deployable areas for HPOD'S.

¹³ <https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm>

¹⁴ Paragraph 25 of the Consultation

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.

As discussed section A above, Ericsson believes it will be tremendously beneficial for Canadian consumers and industry that the Department adopt the same rules as the FCC for HPODs.

Ericsson believes a similar approach as in the US, i.e. license-exempted with registration, would provide a balance of timely deployment of HPOD's following the policy of "not interfering with, nor claiming protection from licensed services"¹⁵ and the protection of incumbent satellite services in the 5150-5250 MHz frequency band.

In that case, Ericsson understands that corresponding technical standards RSS-GEN and RSS-247 would have to be revised.

===== END OF DOCUMENT =====

¹⁵ Spectrum Policy SP-5150: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01158.html>