

Consultation on Releasing Millimetre Wave Spectrum to Support 5G (SLPB-001-17)

Comments of
Ericsson Canada Inc.

September 15th, 2017

September 15th, 2017

Sent by email to: ic.spectrmauctions-encheresduspectre.ic@canada.ca

Cc:

Senior Director, Spectrum Licensing and Auction Operations,
Innovation, Science and Economic Development Canada,
235 Queen Street, 6th floor,
Ottawa, Ontario K1A 0H5.

RE: Canada Gazette, Part I, June 17th, 2017, Notice No. SLPB-001-17 - Consultation on Releasing Millimetre Wave Spectrum to Support 5G

Please find attached the comments of Ericsson Canada Inc. in response to the Canada Gazette, Part 1, dated June 5th, 2017, Notice No. SLPB-001-17 - Consultation on Releasing Millimetre Wave Spectrum to Support 5G (“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 Innovation, Science and Economic Development (ISED) Canada in the future on this very important topic.

Sincerely,

Viet Nguyen
Director, Regulatory and Government Relations
Ericsson Canada Inc.
200-2425 Matheson Blvd. E
Mississauga, Ontario L4W 5K4, Canada

INTRODUCTION

Ericsson appreciates the opportunity to respond to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G (the “Consultation”). Ericsson would like to commend Innovation, Science and Economic Development Canada (ISED) for inviting industry to comment on this very important issue.

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.

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.¹

¹ Ericsson website: www.ericsson.com

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.²

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.

Ericsson has been actively participated in the Radio Advisory Board of Canada (RABC) working group and supports many of the positions put forward by mobile industry community. Below are Ericsson's detailed responses and additional information pertinent to this Consultation.

² Ericsson Canada website: <http://www.ericsson.com/ca/>

EXECUTIVE SUMMARY

Ericsson commends ISED's action in making mmWave spectrum available for next generation 5G terrestrial services. We are at the dawn of a digital revolution, enabled by the three pillars of mobility, cloud and broadband, that has the potential to fundamentally transform every industry. Changes are occurring in the automotive, construction, energy, health, manufacturing, media, retail and transport industries; disrupting business models and making us rethink our ways of working. 5G technologies will play a crucial role in this transformation as it provides different and specific capabilities not only for consumers but also for businesses and society at large, unleashing the full potential of the Internet of Things (IoT).

Ericsson urges ISED to release mmWave spectrum as early as possible to support 5G technologies. This initiative will bolster Canada's position as a leader in wireless technologies, and will enable Canadians to use next-generation technologies and participate in the digital economy. In addition, Ericsson also urges ISED to consider regulations that will not impede or slow down the deployment of flexible terrestrial services, permit Canada to leverage larger equipment ecosystems, and incentivize investment.

Ericsson encourages ISED, in future consultation, to consider mid-band frequency ranges (in the GHz range) as potential spectrum bands for terrestrial mobile broadband services, complement to these mmWave bands and already licenced spectrum bands. This action is to address the additional spectrum needs and to support a variety of use cases relying 5G networks' specific capabilities of very high capacity, ultra-low latency and very wide coverage.

In following the above principles and with regard to a number of technical questions, Ericsson recommends ISED to:

- Support co-existence regulations that would facilitate, avoid delays and avoid impediments to the deployment of flexible use terrestrial networks.

- Expedite the release spectrum bands in the range 27.5 - 28.35 GHz, 37 - 40 GHz and 64 - 71 GHz for flexible use terrestrial services and harmonise with the U.S. band plan.
- Maintain the priority between fixed, mobile terrestrial services in relation to satellite services in the above-mentioned bands.
- For site-by-site coordination, establish a PFD limit of $-77.6 \text{ dBm/m}^2/\text{MHz}$ at a height of 10m above the ground as the coordination trigger in the band 27.5 - 28.35 GHz and 37-40 GHz, unless further study indicates otherwise.
- Not mandate any limits on the aggregate power levels produced by flexible use systems, unless further study indicates otherwise.

COMMENTS ON SPECIFIC QUESTIONS

Question 4-1: Given the disruptive nature of 5G, will new business models and network applications develop that may require policy and regulatory consideration from ISED? Please describe potential new business models and network applications as well as their benefits to Canadians.

Given the disruptive nature of 5G, will new business models and network applications develop that may require policy and regulatory consideration from ISED?

Ericsson commends ISED's timely issuing of this Consultation and in seeking input to make millimetre wave (mmWave) spectrum available for the fifth-generation of terrestrial mobile services ("5G") and to evolve existing systems. 5G will continue extending and building on today's 4G-LTE mobile data services, but it will also enable countless new applications that will benefit from key 5G capabilities: high data rate, low latency, and massive numbers of connected devices.

Currently, Canada is one of the countries which are at the forefront of wireless industry. In a report issued by OpenSignal³ and cited by the CBC⁴, with an average 4G-LTE speed of 30.58 Mbps, Canada is ahead of Sweden, UK and US in average 4G-LTE speed. In terms of availability (which is a metric tracking the proportion of time users have access to 4G-LTE networks), Canada's is measured at 75.42% and is ahead of Australia, UK and France. Additionally, according to the Canadian Radio-television and Telecommunications Commission's (CRTC) Monitoring report, Canadian 4G-LTE coverage reaches over 97% of the population⁵. CRTC's report also identified the importance of wireless industry in Canada which *"represents more than half (51%) of all retail telecommunications service revenues. The wireless service market sector is the largest single retail telecommunications service sector, and has grown more than any other sector since 2008."*

³ <https://opensignal.com/reports/2016/11/state-of-lte>

⁴ <http://www.cbc.ca/news/business/opensignal-lte-speeds-1.4147893>

⁵ <http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2016/cmrs.htm#exi>

As for future growth of wireless industry in North America, according to Ericsson’s Mobility Report, North America’s current leading position in LTE subscriptions “*is set to continue with 5G, as leading operators in the region have stated their intention to expand into pre-standardized 5G already in 2017. As such, the region will have the highest share of 5G subscriptions in 2022 at 25 percent.*”⁶

Furthermore, there are many countries around the world that have expressed great interest in moving forward with 5G development as rapidly as possible. Korea and Japan, as hosts of the 2018 Winter Olympics⁷ and the 2020 Summer Olympics⁸, respectively, have been investing heavily and are on track in making sure that 5G wireless services is an integral part of the Olympic experience. Ericsson is actively working with network operators in the U.S. and around the world to develop plans for rapid 5G development deployment and user adoption⁹.

Therefore, considering all above factors: the current Canadian leading position in 4G, the potential of wireless industry in US and Canada and the race towards 5G occurring around the world, it is imperative that ISED introduce a spectrum regulatory environment that further strengthens Canada’s position in the global wireless industry, fosters Canadian innovation and competitiveness:

- Regulations that do not impede or slow down the deployment of flexible terrestrial services.
- Harmonize spectrum band plan so that Canada can leverage larger equipment ecosystems, either regionally or globally.
- Implement a spectrum regulatory regime that provides regulatory certainty and incentivizes investment. Specially, priority should be given on designating more licenced

⁶ Mobility Report June 2017, North America Regional Report, Page 9
<https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017-north-america.pdf>

⁷ <http://www.koreaherald.com/view.php?ud=20161213000819>

⁸ <https://www.telecomstechnews.com/news/2017/may/31/japan-prepares-2020-olympic-games-5g-trial-system/>

⁹ <https://www.ericsson.com/en/5g>

spectrum rather than unlicensed spectrum. When possible, to avoid the complexity and associated with sharing spectrum using databases.

- For mmWave spectrum bands addressed in this Consultation, adopt the flexible use of licences which “*would allow a licensee to decide whether to deploy fixed systems, mobile systems or a combination of fixed and mobile systems as they see fit*”.¹⁰

These regulatory principles will be discussed in detail in sections below.

Please describe potential new business models and network applications as well as their benefits to Canadians.

5G will be disruptive across industries as identified by ISED “*Forecasted use cases include enhanced/ultra-fast mobile broadband, massive machine type communications, and ultra-reliable/low latency communications, all of which are predicted to drive increased usage and facilitate deployment of integrated verticals such as healthcare, transportation, and smart cities, while leveraging massive Internet-of-Things (IoT) growth*”¹¹.

As a leader in 5G, Ericsson together with its partners, have been committed to bringing 5G technologies from research labs, transforming use case studies¹² into real-world applications. These real-world applications have helped Ericsson to better understand 5G social and economic impacts across numerous industries such as mining, education, health care and entertainment.¹³ Among many scenarios, below are two specific scenarios of collaboration between Ericsson and its partners to bring 5G benefits to the market places: Boliden mining and Paris Saint-Germain Soccer Club.

¹⁰ Page 4 of the Consultation

¹¹ The Consultation, paragraph 8

¹² <https://www.ericsson.com/en/5g/use-cases>

¹³ <https://www.ericsson.com/en/networked-society/innovation/research-and-development-collaborations/cross-industry-collaborations>

Boliden mining

Collaborating with ABB, SICS Swedish ICT, and Volvo Construction equipment, Ericsson have been able to provide communication infrastructure and ICT platform to enable innovations that create a safer, more secure and more comfortable working environment for miners at Boliden mining;¹⁴. The remote control of machines and smart ventilation are perhaps the two most crucial use cases in improving safety and efficiency in the mines. With low latency and ultra-high-speed connectivity, remote control applications with multiple feedback sources (video, audio, haptic) are enabled; helping to avoid having people in the most dangerous areas, and at the most dangerous times. There are also a wide range of other use cases that we are exploring, including video surveillance; man-down detection; and localization of machines, vehicles, things and people – highlighting the immense potential for innovation and productivity improvement within the mining industry.

Paris Saint-Germain Soccer Club

In the sports and entertainment field, Ericsson has teamed up with the Paris Saint-Germain soccer club to pursue Paris Saint-Germain's goal of becoming the most digitally advanced team in the game¹⁵.

- The Sports Performance Information System: designed to capture and control data from all of the club's sports-related businesses. Powerful data visualization, with 5G wireless feedback and control, will give Paris Saint-Germain unprecedented insight into scouting, player health, scheduling, and much more.
- The Paris Saint-Germain Digital Experience platform: will power a myriad of features to enrich, real time, fan base experience, with feedback from 5G sensors and cameras, on mobile to desktop and in-stadium screens. It will go beyond standard data sources, also

¹⁴ <https://www.ericsson.com/en/networked-society/innovation/reliable-communications/boliden>

¹⁵ <https://www.ericsson.com/en/networked-society/live-sports-experience/psg>

capturing news, weather, traffic, and in-stadium food and beverage updates for the total game-day experience.

In fact, 5G will be a major global technology in creating, growing and enhancing industrial digitalization. It is predicted that digital revenue for ICT players will be worth around USD 3.3 trillion by 2026 across the 8 key industries studied: public safety, manufacturing, financial services, healthcare, energy utilities, automotive, media and entertainment, and public transport¹⁶.

Question 5-1: ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 28 GHz and 37-40 GHz frequency bands, and allowing licence-exempt use of the 64-71 GHz frequency band ahead of WRC-19 and before 5G technology standards are finalized.

Ericsson appreciates ISED's effort in allowing Canadian innovators have access to short-term developmental licences for the testing of equipment, hardware and software. As indicated in the Consultation as of today, *“there have been no licences issued under this licensing framework for the 28 GHz frequency band; however there are two licensees operating mobile stations using developmental licences.”*¹⁷

Ericsson's global research and development office in Ottawa is one of those licensees which has been taking advantage of such developmental licence to spearhead a 28 GHz pre-commercial equipment testing to further understand the characteristics of mmWave spectrum bands.

To continue allowing access to short-term developmental licences for testing of equipment is extremely important for the research and development initiatives that benefit Canadians and global wireless industry. However, a timely release of these mmWaves bands and other spectrum

¹⁶ <https://www.ericsson.com/en/networks/insights/the-5g-business-potential>

¹⁷ Page 6 of the Consultation.

bands for commercial terrestrial services are crucial for Canadian wireless industry to remain competitive with the global industry players.

28 GHz and 37-40 GHz frequency bands

As noted in the Consultation, even though the ITU is not currently studying the 28 GHz band (27.5-28.35 GHz), other countries such as the U.S., South Korea and Japan have made a commitment to pursue authorizing mobile operations in this frequency band. In fact, it is important to note that according to the Global mobile Suppliers Association (GSA), many countries support various bands ranging from 24.25-29.5 GHz. For example, Korea is considering band from 26.5-29.5 GHz. The EU is looking at band from 24.25-27.5 GHz¹⁸.

To take advantage of such economies of scale, Ericsson and other vendors have committed to providing equipment with tuning range from 24.25-29.5 GHz and 37-43.5 GHz. Equipment can be reconfigured to operate over multiple bands, operational flexibility may sometimes involve radio equipment that operates across a superset of band allocations over several regulatory jurisdictions, but may also entail using specific hardware configurations that are tailored for one or more markets. In this way, equipment suppliers and therefore the whole industry still benefit from a large equipment ecosystem that is suitable for a variety of band plans.

Considering all 5G related activities in many countries, especially the U.S., Ericsson recommends that ISED make the 28 GHz and 37-40 GHz bands available in timely fashion for flexible mobile and fixed services as addressed in this Consultation to help Canada keep pace in the race towards 5G.

¹⁸ <https://gsacom.com/5g-spectrum-bands/>

64-71 GHz frequency band

In general, Ericsson believes it is preferable to have licenced spectrum rather than unlicensed spectrum because of regulatory certainty and predictable level of quality of services (instead of best effort). Ericsson supports the identification of the band 66-76 GHz for IMT under WRC-19 agenda item 1.13¹⁹, which overlaps the Consultation’s 64-71 GHz. Therefore, for Canada, Ericsson also supports permitting the use of the 64-71 GHz frequency band for flexible use terrestrial services ahead of WRC-19.

Other frequency bands

As discussed above, with the diversity of future 5G applications that have different requirements from wider bandwidth, to reduced latency, and to extended coverage area, no single band will be able provide a complete solution for 5G applications.

In his remarks at CTIA Super Mobility Show 2016, Chairman Wheeler emphasized the importance of FCC’s action on “*spectrum trifecta*”—targeting “*low-band, mid-band, and high-band airwaves that make available unprecedented amounts of spectrum.*”²⁰ Therefore, besides the specific mmWave spectrum bands addressed in the Consultation, Ericsson recommends ISED to consider in future consultations addressing mid-band frequency ranges (in the GHz range) as potential spectrum bands for terrestrial mobile broadband services that complement to these mmWave bands and already licenced spectrum bands.

¹⁹ Res. 238 (WRC-15)

²⁰ https://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0907/DOC-341138A1.pdf

Question 6-1: ISED is seeking comments on the changes proposed above to introduce flexible use licensing in the 28 GHz band, including consequential changes to the CTFA domestic footnotes and the policy on this band contained in SP 3-30 GHz, *Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range and Further Consultation*.

Ericsson supports the Department's position on changes proposed above to introduce flexible use licencing in the 28 GHz band, including consequential changes to the CTFA domestic footnotes and the policy on this band contained in SP 3-30 GHz.

Specifically, Ericsson strongly agrees with footnotes C47A and the new footnote C47C to the CTFA that the use of spectrum for fixed service systems and mobile service systems will be given priority over fixed-satellite service systems.

Ericsson support RABC's proposal to clarify the definition of existing and future FSS earth stations²¹:

- *“Existing” includes an FSS earth station that is either licensed for operation, as listed in Annex A of the Consultation, or for which a licence application has been received by the Department no later than the date of publication of the Consultation and for which a licence is subsequently granted by the Department.*
- *All other FSS earth station applications would fall into the “future” category.*

New FSS earth stations will be licenced on a case-by-case basis in compliance with modified footnote C47A and new footnote C47C.

In addition, Ericsson supports ISED's proposal that airborne and maritime ESIMs continue to be allowed to communicate with geostationary FSS space stations in this frequency band on a case-by-case basis on conditions of no-interference, no-protection. Land-based ESIMs would be

²¹ RABC submission to SLPB-001-17

prohibited from communicating with FSS space stations at this time, due to interference concerns.

Question 6-3: ISED is seeking comments on its proposal to adopt the band plan (as shown in figure 3 above) in the 28 GHz band.

Ericsson supports ISED's proposal to adopt the band plan as shown in Figure 3 of the Consultation in the 28 GHz band, consisting of two unpaired 425 MHz blocks (2 x 425 MHz) and harmonizing with the U.S. band plan. This will permit Canadians to take advantage of the equipment ecosystem that will be made available for the U.S. market and to simplify coordination between terrestrial services along the Canada-U.S. border.

Question 6-4:

Question 6-4-A: ISED seeks comments on its proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 28 GHz band when a pre-determined trigger threshold is exceeded.

Ericsson believes that future earth stations should be licenced only if, in the Department's view, they could comply with the intent of the proposed modified footnote C47A and new footnote C47C which "*does not allow for ubiquitous FSS deployment in the band. As a result, the coordination of flexible use terrestrial stations and FSS earth stations would be limited to a manageable number of cases*"²². With a limited number of cases, Ericsson believes that site-by-site coordination between terrestrial stations and FSS earth station is most effective.

Question 6-4-B: If site-by-site coordination is proposed, what coordination trigger and value would be the most appropriate (e.g. PFD or distance threshold)?

It is noted that the FCC has set a PFD limit of $-77.6 \text{ dBm/m}^2/\text{MHz}$ at a height of 10m above the ground as the coordination trigger. Ericsson supports the use of the same PFD limit as the coordination trigger unless further study indicates otherwise. An excessively restrictive PFD

²² The Consultation, Paragraph 32

value for coordination trigger would result in unnecessary coordination calculations. On the other hand, a too-relaxed PFD value for coordination trigger would result in undetected interference scenarios.

Question 6-4-C: ISED is also inviting proposals for specific technical rules on proposed flexible use stations and FSS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.

Ericsson proposes that as long as the conditions of footnotes C47A and C47C are adhered to, the service providers not be mandated with any specific method and instead have the flexibility to work out an agreeable arrangement to facilitate sharing, which may include site shielding. Experienced system designers and operators will make adjustments where needed, without the need for prescriptive regulations.

Question 6-5:

Question 6-5-A: ISED is seeking comments on whether there should be restrictions on the geographic areas in which new FSS earth stations can be deployed in the 28 GHz band.

Terrestrial services will likely focus more on higher density population areas than will satellite services. Therefore, Ericsson believes that future earth stations (as defined in question 6-1) need to be carefully assessed for compliance with the relative priority proposed in footnotes C47A and C47C of the Consultation, in relation to existing and planned terrestrial stations.

Question 6-5-B: If geographic restrictions on FSS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted.

Ericsson supports RABC's recommendation to form a technical group to develop an acceptable approach to geographically limit FSS earth station deployments, that will sufficiently protect flexible use terrestrial stations without excessively impeding the deployment of FSS stations.

However, since the conditions in modified footnote C47A and new footnote C47C will not allow for ubiquitous FSS deployment in the band, Ericsson recommends that ISED not put the process of licencing mmWave for terrestrial services on hold while waiting for the result of this study, as this study would only affect a limited number of FSS stations.

Question 6-6: ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services. If limits are proposed, ISED is inviting detailed proposals on why they should be implemented, and what the limits should be.

The FCC decided not to establish any regulatory limits on the aggregate power levels produced by terrestrial systems as it does not believe there will be coexistence issues between flexible use terrestrial systems and fixed-satellite services systems, based on numerous studies submitted to the FCC²³.

Ericsson agrees with ISED's assessment that 5G technologies intended for this frequency band will tend to limit transmissions towards the space stations because of the utilisation of beam forming with very narrow beam widths and that most mobile handset use will be indoors²⁴.

Therefore, Ericsson supports ISED's view of not proposing any limits on the aggregate power levels produced by flexible use systems, unless further study indicates otherwise.

Question 6-7: ISED proposes that all existing FSS earth stations and those in applications pending approval for operation would be permitted to continue to operate under the current conditions of licence as described above. Comments are sought on this proposal.

As described earlier, Ericsson supports RABC's definition of existing and future FSS earth stations in question 6-1. With that definition, Ericsson agrees that all existing FSS earth stations would be permitted to continue to operate under the current conditions of licence as described

²³<https://ecfsapi.fcc.gov/file/60002240518.pdf>

²⁴ The Consultation, paragraph 37

above. However, in case of interference, ISED should encourage and permit involved parties to search for solutions to rectify the situation with a mutually acceptable arrangement, that would enable the involved parties to achieve their respective business objectives.

Future earth stations should be licenced on a case-by-case basis and in compliance with footnote C47A and C47C.

Question 7-1: ISED is seeking comments on the proposal to implement flexible use licensing in the frequency band 37-40 GHz, including the consequential changes to CTFA footnote C51, while continuing to allow for fixed-satellite service (space-to-Earth) in the band.

Ericsson supports ISED's proposal to implement flexible use licencing in the frequency band 37-40 GHz, including the consequential changes to CTFA footnote C51, while continuing to allow for fixed-satellite service (space-to-Earth) in the band.

Specifically, Ericsson strongly agrees with footnotes C51 to the CTFA that

- The use of spectrum for fixed service systems and mobile service systems will be given priority over fixed-satellite service systems.
- Fixed-satellite service implementation in this frequency band spectrum will be limited to applications that will pose minimal constraints upon the deployment of fixed and mobile service systems
- New FSS earth stations will be licenced on a case-by-case basis

Question 7-3: ISED is seeking comments on the proposal to adopt the band plan as shown in figure 7 for the frequency band 37-40 GHz.

Ericsson supports ISED's proposal to adopt the band plan (as shown in Figure 7 of the Consultation) for the frequency band 37-40 GHz, harmonizing with the U.S. band plan to leverage equipment ecosystems and to simplify coordination between terrestrial services along the Canada-U.S. border.

For the portion between 37.0-37.6 GHz, the primary objective is to harmonise with the U.S. band plan to leverage the equipment ecosystem designed for the U.S. market. However, Ericsson believes that local Canadian conditions may permit the use of an exclusive licencing regime which is preferable, or a licencing regime that is different and simpler than that of the U.S. This topic will be discussed further in question 9-1.

Question 7-4:

Question 7-4-A: ISED seeks comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the frequency band 37.5-40 GHz when a pre-determined trigger threshold is exceeded.

Similar to question 6-4-A, coordination of flexible use terrestrial stations and FSS earth stations is likely to be manageable because FSS earth stations will likely be limited to a small number. Therefore, Ericsson supports ISED's proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations.

Question 7-4-B: If site-by-site coordination is proposed, what coordination trigger and value would be the most appropriate (e.g. PFD or distance threshold)?

Similar to question 6-4-B, Ericsson supports the use of a PFD limit of $-77.6 \text{ dBm/m}^2/\text{MHz}$ at a height of 10m above the ground as the coordination trigger, unless further study indicates otherwise.

Question 7-4-C: ISED is also inviting proposals for specific additional technical rules on flexible use stations and FSS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.

Similar to question 6-4-C, Ericsson proposes that as long as the conditions of footnote C51 are adhered to, the service providers not be mandated with any specific method and instead have the flexibility to work out an agreeable arrangement to facilitate sharing, which may include site shielding. Experienced system designers and operators will make adjustments where needed, without the need for prescriptive regulations.

Question 7-5:

Question 7-5-A: ISED is seeking comments on whether there should be restrictions on the geographic areas in which new FSS earth stations can be deployed in the frequency band 37.5-40 GHz.

Similar to spectrum in the 28 GHz range, it is expected that terrestrial services will likely focus more on higher density population areas than will satellite services. Therefore, Ericsson believes that future earth stations (as defined in question 6-1) need to be carefully assessed for compliance with the relative priority described in footnote C51 of the Consultation, in relation to existing and planned terrestrial stations.

Question 7-5-B: If geographic restrictions on FSS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted?

Similar to question 6-5-B, Ericsson supports RABC's recommendation to form a technical group to develop an acceptable approach to geographically limit FSS earth station deployments, that will sufficiently protect flexible use terrestrial stations without excessively impeding the deployment of FSS stations.

However, since the conditions in modified footnote C51 will not allow for ubiquitous FSS deployment in the band, Ericsson recommends that ISED not put the process of licencing mmWave for terrestrial services on hold while waiting for the result of this study, as this study would only affect a limited number of FSS stations.

Question 7-6: It is proposed that, should SRS and/or MSS systems be deployed, flexible use licensees in the band 37.6-40 GHz may be subject to technical provisions to facilitate co-existence. Comments are sought. ISED notes that any such technical provisions would be established through a future consultation process.

Ericsson notes that there is no need for any action anticipating future scenarios. As this band would already be shared between the FSS and flexible use terrestrial stations, any introduction of future services would require no constraints being imposed on the incumbent services.

Question 8-1: ISED is seeking comments on its proposal to designate the band 64-71 GHz for licence-exempt operations on a no-protection, no-interference basis.

As discussed earlier, Ericsson believes that licenced spectrum is preferable to licence-exempted spectrum because the former provides regulatory certainty and much improved quality of services, instead of best effort. However, to take advantage of the same equipment ecosystem for the U.S. and to avoid cross-border interference, Ericsson supports hamonisation with the U.S.

Question 9-1: ISED is seeking comments on:

Ericsson fully supports RABC's position on all questions 9-1. Particularly, Ericsson believes that with local Canadian conditions, it may be possible to use exclusively licenced spectrum in the 37.0-37.6 GHz, unlike the U.S. and still be able to leverage the equipment ecosystem designed for the U.S. In this case, exclusive licenced spectrum would help avoid unnecessary complications, regulatory uncertainty and costs associated with licence-exempt dynamic access using databases.

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