

SaskTel Reply Comments:

Gazette Notice SLPB-001-17

Consultation on Releasing Millimetre
Wave Spectrum to Support 5G

November 10, 2017

EXECUTIVE SUMMARY

1. The following is a summary of SaskTel's Reply Comments in response to comments posted regarding Gazette Notice SLPB-001-17 *Consultation on Releasing Millimetre Wave Spectrum to Support 5G* ("the Consultation").
2. The mmWave spectrum bands included in the Consultation will be crucial for initial 5G deployments to allow high speed wireless broadband services in urban areas. This in turn will allow new applications and services to develop.
3. The 28 and 37-40 GHz bands are shared with Fixed Satellite Services (FSS). The Department's soft partitioning approach and other rules will allow sharing between flexible use licensed fixed and mobile systems and FSS earth stations, although geographic restrictions and coordination procedures will have to be followed. These rules and procedures will have to be established based upon a co-existence study. SaskTel believes that mutually agreeable power flux density limits can be determined, and that it will be possible for licensed 5G fixed and mobile systems to co-exist with FSS earth stations while still posing minimal constraints on the deployment of fixed and mobile systems.
4. SaskTel recommends that the Department adopt the 28 GHz band plan proposed by Rogers which features four 200 MHz blocks. Having four blocks will allow more flexibility and allow more operators to utilize the 28 GHz band. Although not fully harmonized with the U.S. FCC band plan, it is well aligned with 3GPP standards being developed, including channel bandwidths of 50, 100, 200, and 400 MHz.
5. SaskTel still believes that the mmWave auction process should be open and transparent, and that no measures such as spectrum caps or set-asides should be imposed in order to allow market forces to properly determine mmWave spectrum values without artificial constraints. Should the Department choose to implement such measures, SaskTel believes that the least disruptive measure would be a non-band specific aggregation limit of 1250 MHz of mmWave spectrum in any service area, as suggested by TELUS.

INTRODUCTION

6. Saskatchewan Telecommunications (“SaskTel” or “the Company”) is pleased to provide these reply comments in response to comments posted on the Innovation, Science, and Economic Development (ISED) website regarding Gazette Notice SLPB-001-17 *Consultation Releasing Millimetre Wave Spectrum to Support 5G* (“the Consultation”).
7. Comments were submitted by a number of industry companies and organizations, including 5G Americas, Bell Mobility, British Columbia Broadband Association, BSO Coalition, Ciel Satellite LP and Affiliates, Cogeco Communications Inc., Dynamic Spectrum Alliance, Ericsson Canada, Facebook Inc., Global Mobile Suppliers Association, Huawei Technologies Canada, IEEE LAN/MAN Standards Committee, Intel Corporation, Intelsat Corporation, Microsoft, Nokia, Québecor Média, Radio Advisory Board of Canada, Rogers Communications, Samsung Electronics Canada Inc., Shaw Communications Inc., Siklu Communication, Starry Inc., Telesat Canada, TELUS, TeraGo Networks, ViaSat Inc., Wi-Fi Alliance, Xplornet Communications Inc., and SaskTel. A number of other groups and private individuals also submitted Comments.¹
8. SaskTel has reviewed these submissions and hereby provides reply comments meant to provide additional clarity on our positions where appropriate, in response to the Comments posted by others. Failure to address any particular issue or item, or the Comments made by any other party, should not be construed as agreement with those Comments where such agreement is not in the interests of SaskTel.
9. The section numbering of this document corresponds to the section numbering of the Consultation.

¹ Comments are posted on the ISED website at <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11332.html>

SASKTEL REPLY COMMENTS TO THE CONSULTATION ON RELEASING MILLIMETRE WAVE SPECTRUM TO SUPPORT 5G

General Reply Comments

10. SaskTel believes that this consultation is timely, and that it is appropriate for the Department to move ahead with the development of policies, licensing models, and band plans for the 28 GHz, 37-40 GHz, and 64-71 GHz bands. Most commenters agreed that 5G development is advancing rapidly and it is best not to wait for decisions to be made at WRC-19, nor wait for 3GPP standards to be finalized before proceeding with spectrum policy decisions.
11. SaskTel, along with virtually all other commenters believes that new 5G technological advancements offer great potential and numerous opportunities. The mmWave spectrum will play a crucial role for deployment of high speed wireless broadband services using 5G technology in urban areas and other high population clusters. Low and mid-band spectrum will also be utilized to deliver 5G services over wider coverage areas, albeit without the same high bandwidths and data speeds available using mmWave spectrum.
12. As detailed in our initial comments, SaskTel agrees with the Department's proposal for fixed and mobile flexible use licensing, along with the soft partitioning approach that will allow sharing of the band between flexible use fixed and mobile services with fixed satellite services (FSS) earth stations. Most commenters also agreed to these proposals.
13. Geographic restrictions on new FSS earth stations will be necessary, and coordination will be required between FSS earth stations (new and existing) and flexible use fixed and mobile systems. A coordination procedure using mutually agreeable power flux density (PFD) values for coordination triggers and coexistence limits will have to be established, along with appropriate geographical restrictions.
14. However, SaskTel still firmly believes that geographical restrictions and coordination procedures can be implemented that will allow for coexistence of flexible use licensed

5G deployments and FSS earth stations, and which will pose minimal constraints upon the deployment of fixed and mobile 5G systems.

Specific Reply Comments

6. 28 GHz frequency band (27.5-28.35 GHz)

6.4 Changes to band plan

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

15. Most of the commenters agreed with the Department's proposal to harmonize with the U.S. and adopt the FCC band plan as shown in Figure 3 of the Consultation. The U.S. band plan divides the 28 GHz band into two 425 MHz blocks. SaskTel agrees that it is important to harmonize the Canadian band plan with both the FCC and with 3GPP standards being developed for 5G.

16. However, SaskTel notes with interest the proposal from Rogers to adopt a band plan with four blocks of 200 MHz each. The proposed band plan is shown in Figure A below, and more details can be found in the Rogers comments.²

17. SaskTel supports the Rogers proposal for the 28 GHz band plan with four 200 MHz blocks. We agree with Rogers that the band plan should align with 3GPP standards under development, which will include proposed channel bandwidths of 50, 100, 200, and 400 MHz. Although not fully harmonized with the FCC band plan, SaskTel feels it is more important to align with 3GPP standards, which will drive the device ecosystem, and that any coordination issues with this band plan along the Canada-U.S. border can be resolved.

² Rogers comments, paragraphs 24-32

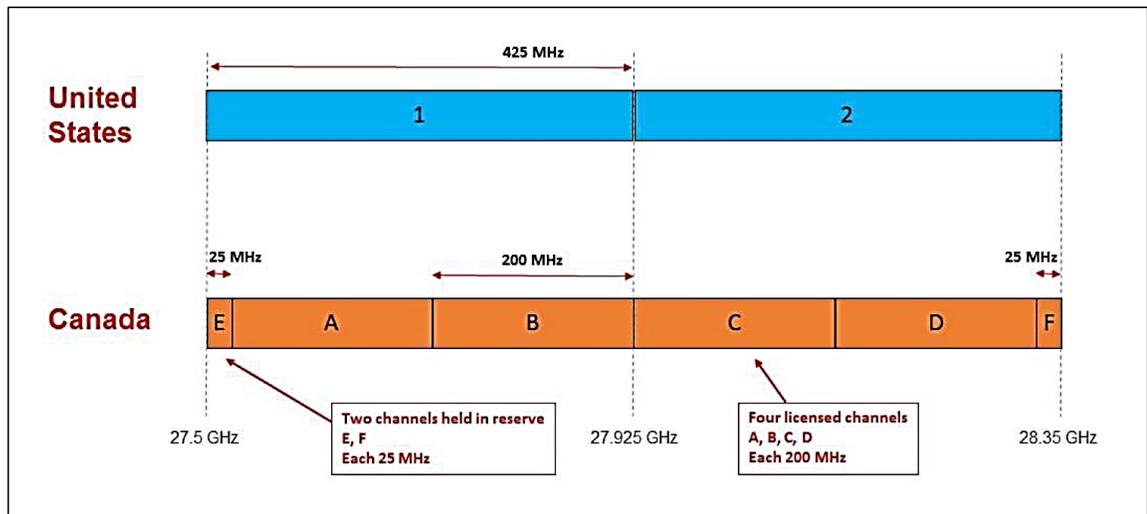


Figure A Rogers' Proposed 28 GHz Band Plan³

18. One key benefit of this proposed band plan is that the four blocks will allow for more operators (up to four) to acquire spectrum in a service area. Operators that need more bandwidth at 28 GHz would still have the option to acquire multiple blocks of spectrum in the auction should they choose to do so.
19. SaskTel notes that TeraGo Networks⁴ in their comments proposed a band plan with four 200 MHz blocks. Shaw Communications⁵ also proposed a band plan with four blocks, but with block sizes of 212.5 MHz each. SaskTel does not agree with the 212.5 MHz block size proposed by Shaw. SaskTel believes the spectrum would be more efficiently utilized by following the band plan proposed by Rogers, and their proposal to hold two 25 MHz blocks of spectrum in reserve with the Department. The channel bandwidths being developed by 3GPP more closely align with the Rogers proposal. Therefore, SaskTel prefers the Rogers proposal.
20. Although not completely harmonized with the U.S. band plan, SaskTel recommends using the 28 GHz band plan proposed by Rogers because it allows for more operators to utilize the band, and is aligned with 3GPP standards.

³ Figure A from Rogers Comments, page 9

⁴ TeraGo Networks Comments, paragraph 22

⁵ Shaw Communications Comments, paragraph 44

9. General spectrum access considerations for terrestrial services in the 28 GHz and 37-40 GHz frequency bands

Question 9-1:

C. ISED is seeking comments on whether a licence-exempt dynamic access using data base should be implemented in all, or portions of the 28 GHz, 37-40 GHz, particularly in the band 37-37.6 GHz.

21. SaskTel notes that almost all of the commenters from the wireless industry opposed the implementation of licence-exempt dynamic spectrum access using a database in any of the bands. The dynamic access database technology is unproven, costly, more complex, and most importantly not required because in Canada there are no incumbent users in any of these bands needing protection from new spectrum users.
22. SaskTel opposes the proposal to use licence-exempt dynamic spectrum access using a database in any of the mmWave bands being considered.

9.4 Measures to support competition (if exclusive licencing is implemented)

Question 9-3: If an exclusive licensing approach is proposed, ISED is seeking preliminary comments on possible measures that could support competition in light of the current conditions in the Canadian wireless service market and anticipated development and deployment of 5G services if flexible use licensing is developed through a spectrum licensing model.

23. Only a few parties provided comments on measures to support competition, with some commenters noting that it was premature to make any firm decisions on what measures to take as work to develop and standardize 5G technology is still ongoing, and decisions on mmWave spectrum band plans have not yet been made. However, SaskTel understands that the Department is seeking preliminary comments at this time.
24. The wireless market in Saskatchewan is already highly competitive. As stated in our comments, the presence of four carriers in the Saskatchewan market has directly resulted in some of the lowest consumer prices for wireless services in the country. The presence of a fourth player in the market greatly increases overall competitiveness, as it does everywhere else in the country where a fourth player is competing.

25. In this competitive market SaskTel does not believe the right approach is to use artificial measures to distort the marketplace and attempt to attract a fifth player as a new entrant. In fact, many of the “small” players being encouraged by the Department through artificial subsidies are actually well financed and well established wireless operators.
26. The Saskatchewan market place is highly competitive, and SaskTel believes that market forces need to be relied upon to the greatest extent feasible, a key enabling guideline of ISED’s “Spectrum Policy Framework for Canada”.
27. The only method whereby market forces can be truly allowed to operate freely is through the use of an open and transparent auction process, with a level playing field for all bidders. SaskTel does not believe spectrum aggregation limits or set-aside mechanisms are necessary or even appropriate in a competitive marketplace with four strong players. Imposing such measures in the mmWave spectrum auction would artificially distort the market and would be detrimental to consumers.
28. As TELUS noted in their comments,⁶

The 5G mmWave network business opportunity is completely green field and all interested parties are starting from scratch in terms of flexible use mmWave spectrum in Canada.

29. The mmWave spectrum propagation characteristics are completely different from all other mobile spectrum. All interested parties have an equal opportunity to begin building 5G networks, and all parties should be given a fair and equal opportunity to acquire this new spectrum as they see fit based upon their own business and market plans. SaskTel strongly believes that measures such as set asides or aggregation limits are not necessary, and in fact would harm the green field mmWave spectrum market by artificially raising and/or lowering spectrum values, and artificially picking winners and losers. SaskTel recommends that market forces be allowed to operate freely without the imposition of artificial measures to control the auction in this brand new mobile spectrum.

⁶ TELUS Comments, paragraphs 87

30. However, should the Department choose to implement some sort of measure to promote competition, SaskTel believes that a mmWave non-band specific aggregation limit would be a reasonable, fair, and equitable measure that would also be least disruptive to the auction.

31. TELUS has proposed such an aggregation limit in their comments:

TELUS notes that the FCC has defined a 1250 MHz aggregation limit across these same bands in the U.S., where four or more players compete in each market. TELUS views this aggregation limit as reasonable for the Canadian market, assuming that all of the spectrum addressed in the Consultation is available and unencumbered.⁷

32. SaskTel agrees with TELUS that their proposed aggregation limit is a reasonable measure, should the Department choose to implement measures to support competition. The FCC set the proper precedent by applying the limit in markets where there are four or more players, with a limit of 1250 MHz covering all of the mmWave bands being considered. The limit of 1250 MHz allows the opportunity for service providers to acquire sufficient spectrum to meet ITU-R objectives of wireless broadband download speeds up to 20 GB/s, and allows bidders the flexibility to acquire spectrum in the band(s) best suited for their market and network deployment. This flexibility makes the proposed aggregation limit minimally restrictive and least disruptive to the mmWave spectrum market.

CONCLUSION

33. In our reply comments, SaskTel has provided our views on some of the issues raised in the Consultation based upon our review of the Comments submitted in response to the Gazette Notice.

- SaskTel believes that 5G technologies will provide great potential and opportunities to allow delivery of enhanced mobile broadband services and allow new applications and services to develop. The mmWave spectrum will play a crucial role in 5G for urban deployments.

⁷ TELUS Comments, paragraph 93

- The Department's soft partitioning approach and other rules will allow sharing between flexible use licensed fixed and mobile systems and FSS earth stations in the 28 and 37-40 GHz bands, although geographic restrictions and coordination procedures will have to be followed. These rules and procedures will have to be established based upon a co-existence study. SaskTel believes that mutually agreeable power flux density limits can be determined, and that it will be possible for licensed 5G fixed and mobile systems to co-exist with FSS earth stations while still posing minimal constraints on the deployment of fixed and mobile systems.
 - SaskTel recommends that the Department adopt the 28 GHz band plan proposed by Rogers which features four 200 MHz blocks. Having four blocks will allow more flexibility and allow more operators to utilize the 28 GHz band. Although not fully harmonized with the U.S. FCC band plan, it is well aligned, and more importantly the proposed band plan with 200 MHz block sizes aligns well with 3GPP standards and proposed channel bandwidths of 50, 100, and 200 MHz.
 - SaskTel still believes that the mmWave auction process should be open and transparent, and that no measures such as spectrum caps or set-asides should be imposed in order to allow market forces to properly determine mmWave spectrum values without artificial constraints. Should the Department choose to implement such measures, SaskTel believes that the least disruptive measure would be a non-band specific aggregation limit of 1250 MHz of mmWave spectrum in any service area as suggested by TELUS.
34. SaskTel is pleased to have had the opportunity to provide our inputs and comments to the important issues raised in this Consultation, and hopes that our submission will provide a fuller view of these issues to the Department.