

SaskTel Comments:

Gazette Notice SLPB-005-18

Addendum to the Consultation on
Releasing Millimetre Wave Spectrum
to Support 5G

July 5, 2018

EXECUTIVE SUMMARY

1. The following is a summary of SaskTel's submission in response to Gazette Notice SLPB-005-18 *Addendum to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G* ("the Consultation").
2. 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 26 GHz band, concurrently with developments and decisions on policies for the 28 GHz, 37-40 GHz, and 64-71 GHz bands.
3. The 26 GHz band is on the agenda for the upcoming ITU WRC-19 Conference. Although the 26 GHz band is not available for flexible use (5G) services in the United States, there is strong interest in the 26 GHz band in the European Union, China, Japan, and Korea. Canadians will therefore benefit from the economies of scale created by the device ecosystem created for these markets, despite the absence of the US market.
4. The inherent short transmission ranges of the 26 GHz mmWave band will greatly reduce cross-border interference and coordination issues with the United States. Coordination with the US will only be required in a small zone along the border, allowing Canadians to benefit from unhindered 26 GHz deployments in almost all of Canada.
5. SaskTel recommends that the Department proceed forward with the proposed flexible use licensing model for the 26 GHz band, allowing both mobile and fixed systems to be deployed, concurrently with the ongoing work on the 28 GHz and 37-40 GHz bands.
6. It is extremely important that the 26 GHz band plan adopted for Canada be compatible with 3GPP standards. 5G systems deployed in Europe, China, Japan, and Korea will be based on 3GPP standards, and it is essential that the Canadian band plan be aligned with 3GPP standards.

7. The 26 GHz band (26.5-27.5 GHz) is adjacent to the 28 GHz band (27.5-28.35 GHz), and SaskTel agrees that these two bands should be reviewed and considered as one whole band.
8. The US FCC has divided the 28 GHz into 2 x 425 MHz blocks, a purely arbitrary decision that does not align well with 3GPP channel bandwidths standardized at 50 MHz, 100 MHz, 200 MHz, and 400 MHz. Regardless of the combination of channel bandwidths deployed, the FCC block size of 425 MHz will always result in 25 MHz of spectrum being wasted. SaskTel therefore does not believe it is in the best interest of Canada to adopt the US FCC band plan for 28 GHz.
9. SaskTel recommends a band plan be adopted in Canada that is harmonized with 3GPP band plans and channel bandwidths, and covers the entire 26.5-28.35 GHz spectrum band. SaskTel prefers larger block sizes, and believes it will be appropriate that a mixture of frequency block sizes be included in the band plan, ranging from 100 MHz to 400 MHz wide, based upon multiples of the 3GPP standardized channel bandwidths. SaskTel recommends that a minimum frequency block size of 100 MHz be employed, because smaller block sizes will not be capable of delivering the very high data speeds forecast for future 5G based services.
10. SaskTel agrees with the Department's assessment that the likelihood of adverse impacts on space stations in the 26 and 28 GHz bands due to aggregate emissions from terrestrial 5G systems is very low. The use of dynamic beam forming and massive MIMO will result in very narrow, dynamically directed beamwidths that will greatly reduce skyward emissions and mitigate interference to space stations. Therefore, SaskTel agrees that aggregate emission limits are not necessary on terrestrial 5G systems in the 26 and 28 GHz bands.
11. For both the 26 and 28 GHz bands, SaskTel recommends the use of a site-by-site coordination process between proposed flexible use terrestrial stations and earth stations to ensure that earth station deployments do not hinder terrestrial 5G system deployments. SaskTel recommends that a power flux density (PFD) threshold be used to trigger the coordination process. The value of the PFD trigger thresholds, along with other coordination process details, are expected to be discussed at a

proposed RABC working group, consisting of representatives from both the satellite industry and terrestrial mobile service providers.

12. SaskTel also believes that geographical restrictions on the deployment of new earth stations in the 26 GHz band will be required to ensure that new earth station deployments do not hinder deployment of terrestrial 5G systems. It is anticipated that these geographical restrictions will be discussed at the proposed RABC working group.
13. The 26 GHz band is very similar to the 28 GHz and 37-40 GHz bands. Therefore, the licensing considerations for the bands are also similar. SaskTel has submitted comments in our response to the mmWave Consultation¹ on licensing for this spectrum, and these comments remain applicable.
14. SaskTel recommends that the 26 GHz, 28 GHz, and 37-40 GHz bands be licensed on an exclusive basis. SaskTel notes the suggestion by the Department that some of the 26 GHz and 28 GHz bands could be licensed using a shared use model. SaskTel believes that the entire 26.5-28.35 GHz band (1.85 GHz wide) should be exclusively licensed because there is a large amount of contiguous licence exempt spectrum (14 GHz) available or soon available in the 57-71 GHz range, which is more than enough spectrum for operators wishing to deploy mmWave systems, presumably at a lower cost, using shared spectrum.
15. With the rapidly evolving 5G wireless technology suite, new network architectures, and with services and applications still to be defined, it is important that the Department be flexible in their policies and regulations for the new spectrum bands and new 5G network deployments.

¹ SaskTel Comments in Response to Gazette Notice SLPB-001-17 “*Consultation of Releasing Millimetre Wave Spectrum to Support 5G*”, September 15, 2017, section 9

INTRODUCTION

16. Saskatchewan Telecommunications (“SaskTel” or “the Company”) is pleased to provide this response to Gazette Notice SLPB-005-18 *Addendum to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G* (“the Consultation”).
17. SaskTel’s detailed responses to the questions posed in the Consultation are below. The section numbering of this document corresponds to the section numbering of the Consultation. 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.

SASKTEL RESPONSE TO THE ADDENDUM TO THE CONSULTATION ON RELEASING MILLIMETRE WAVE SPECTRUM TO SUPPORT 5G

2. *Background and context*

Question A1: ISED is seeking comments on the development of a flexible use licensing model for fixed and mobile services in the 26 GHz band (in addition to the bands currently under consultation through the mmWave Consultation), taking into account the timing of WRC-19, 5G technology standards development, international ecosystems and harmonization of spectrum use with other countries.

18. SaskTel agrees with the proposal by the Department to adopt a flexible use licensing model for fixed and mobile services in the 26.5-27.5 GHz band (26 GHz band), concurrently and in alignment with the other bands included in the mmWave Consultation². This flexible use licensing model would allow licensees to deploy fixed systems, mobile systems, or a combination of fixed and mobile systems as they see fit. It is foreseen that deployments in these bands will be ubiquitous in nature in urban areas, with the possibility of deployments in smaller population clusters in rural areas. SaskTel recommends that these deployments be licensed using spectrum licences covering a defined service area, as opposed to site-by-site licensing.
19. 5G technology trials are still ongoing in parallel with work on establishing and finalizing industry standards. Potential use cases and business models are still being

² Canada Gazette Notice SLPB-001-17 “*Consultation on Releasing Millimetre Wave Spectrum to Support 5G*”, released June 5, 2017

developed. Initially it was suggested that the primary focus of 5G would be mobile services, but lately there has been an increasing focus on the potential for 5G to provide fixed services to customers in a small-cell type architecture.

20. SaskTel agrees with the Department in their goal of supporting and promoting innovation in the wireless industry, and believes that the adoption of a flexible use licensing model would be the best approach to accomplish this for the development and deployment of 5G systems in the 26 GHz band.
21. As noted in the Consultation³, the 26 GHz band is part of the agenda for the ITU World Radio Communications Conference 2019 (WRC-19), which will consider frequency bands to be identified for future mobile broadband services, including 5G services. The 3rd Generation Partnership Project (3GPP) is standardizing on the 26 GHz band. The Department also noted in the Consultation⁴ the strong interest in the European Union, China, Korea, and Japan to develop and deploy 5G mobile broadband systems in the 26 GHz band.
22. However, as the Department notes in the Consultation⁵, the 26 GHz band is currently not available for flexible use in the United States. SaskTel does not believe that the unavailability of the 26 GHz band for 5G in the United States will impact the deployment of the band in Canada. Any potential interference Issues along the Canada-US border interference can easily be mitigated due to the short propagation distances inherent to the 26 GHz band. The significant interest in Europe and in the large markets of China, Korea, and Japan will allow for the development of a significant device ecosystem that includes the 26 GHz band in user devices.
23. Therefore, SaskTel recommends the Department proceed forward with the proposed flexible use licensing model for the 26 GHz band, as proposed in the Consultation.

³ The Consultation, paragraph 3

⁴ Ibid, paragraph 4

⁵ Ibid, section 3.3, paragraph 16

3. 26 GHz frequency band (26.5–27.5 GHz)

3.2 Changes to spectrum utilization policies

Question A2: ISED is seeking comments on the changes proposed above to introduce flexible use licensing in the 26 GHz band, including the ensuing changes to the CTFA Canadian 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”.

24. SaskTel agrees with the changes as proposed by the Department in the consultation to introduce flexible use licensing in the 26 GHz band, including ensuing changes to Canadian Table of Frequency Allocations (CTFA) footnote C47A, and the new proposed footnote CXX. This also includes the relevant changes to the policy on this band contained in ISED document SP 3-30 GHz “Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range and Further Consultation”.

25. SaskTel also agrees with the Department that soft partitioning will continue to be an effective approach to sharing spectrum in this band, allowing the deployment of satellite services and earth stations while ensuring that minimal constraints are imposed on the future deployment of fixed and mobile services.

3.3 Block size and harmonization of band plan

Question A3: ISED is seeking comments on the importance of harmonizing the Canadian band plan with the United States in the 26 GHz and 28 GHz bands, recognizing that the 26 GHz band is not available for 5G services in the United States at this time.

26. Considering that the 26 GHz band is currently not available in the United States, SaskTel believes it is more important that the Canadian band plan be in alignment with 3GPP standards being developed, and International Telecommunications Union (ITU) decisions on a band plan for this spectrum. The 26 GHz band is on the agenda for the upcoming ITU WRC-19 conference. The development of the device ecosystem for this band will be driven by the strong interest in this band in the European Union, China, Japan, and Korea, in alignment with 3GPP standards. Canada can greatly benefit from the economies of scale from the 26 GHz band device ecosystem if we fully harmonize our band plan with 3GPP standards.

27. Even though the 26 GHz band is not available for flexible use licensing in the United States, and some aspects of the US FCC band plan for 28 GHz⁶ are not well aligned with 3GPP band plans, the propagation characteristics of the 26 and 28 GHz bands limit transmission ranges, which will greatly assist cross-border coordination and help mitigate any cross-border interference issues that might arise. Coordination of service, including potentially handoffs, in the areas very close to the border can be managed between operators. Further away from the border, no coordination would be required because of the short range of 28 GHz spectrum, greatly reducing the burden of coordination upon the operators. This will allow deployment of the 26 and 28 GHz bands in Canada in alignment with ITU allocations and 3GPP standards, while still allowing for deployments in the US per the FCC band plan.
28. Therefore, for the 26 and 28 GHz bands, it will be far more beneficial for Canada to adopt a band plan that is in alignment with ITU and 3GPP band plans, rather than harmonizing with the US FCC band plan.
29. SaskTel notes that in our response to SLPB-001-17⁷ we had supported adoption of the US band plan for the 28 GHz band. Now that 3GPP standards have clarified the channel bandwidths that will be included in the 26 and 28 GHz bands, it is apparent that the 425 MHz block size in the US FCC band plan is not a suitable match for the 3GPP channel bandwidths, with the result being wasted spectrum. To clarify our response to this consultation, SaskTel no longer believes that adoption of the US FCC 28 GHz band plan would be in the best interest of Canadians.

Question A4: ISED is seeking comments on the minimum block size that should be made available for the 26.5–28.35 GHz band. Is it necessary that the frequency blocks be multiples of the 3GPP channel bandwidths (50 MHz, 100 MHz, 200 MHz and 400 MHz)?

30. It is very important that Canada harmonize with 3GPP band plans and channel bandwidths for the 26.5-28.35 GHz spectrum, namely 50 MHz, 100 MHz, 200 MHz,

⁶ For example, the US FCC band plan for the 28 GHz band includes 2 x 425 MHz blocks. The 425 MHz block size is not well suited for the 3GPP channel bandwidths of 50, 100, 200, and 400 MHz in this band. Any combination of standard 3GPP carriers will always leave 25 MHz of spectrum fallow for each licence holder.

⁷ SaskTel Comments in Response to Gazette Notice SLPB-001-17 “*Consultation of Releasing Millimetre Wave Spectrum to Support 5G*”, September 15, 2017, para 42.

and 400 MHz channel bandwidths. It is essential for efficient spectrum utilization that the frequency blocks in the Canadian band plan be multiples of the 3GPP bandwidths (50 MHz, 100 MHz, 200 MHz, and 400 MHz). It is a given that mobile service providers will deploy 3GPP standards-based equipment in the 26 and 28 GHz bands in order to leverage the device ecosystem for these bands that will also be based on 3GPP standards.

31. It is assumed that service providers will be allowed to aggregate multiple frequency blocks into larger contiguous blocks, allowing for the deployment of wider 3GPP channel bandwidths.
32. SaskTel recommends a minimum block size of 100 MHz. We do not believe a smaller block size could be justified to provide future very high 5G data speeds. Although SaskTel would of course prefer larger block sizes, SaskTel believes a minimum frequency block size of 100 MHz is appropriate. SaskTel recommends that the Department consider a band plan featuring a mixture of frequency block sizes, from 100 MHz up to 400 MHz wide, with block sizes based upon multiples of the 3GPP standardized channel bandwidths. This will allow service providers the flexibility to choose the most efficient and appropriate 3GPP channel bandwidth(s) to deploy.

3.4 Band sharing with other services

3.4.1 Coexistence between flexible use terrestrial stations and inter-satellite service in the 26.5–27.5 GHz band

Question A5:

A. ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services in the 26.5–27.5 GHz band to ensure coexistence with ISS.

B. If limits are proposed, ISED is inviting detailed proposals on what the limits should be, and why they should be implemented.

33. SaskTel agrees with the Department that 5G systems in the 26.5-27.5 GHz band will employ dynamic beam forming with very narrow beamwidths. These narrow beamwidths will be essential to provide a suitable quality of service to subscriber units and counter-act the difficult propagation characteristics of this spectrum. These

narrow beamwidths will also in turn drastically reduce the amount of potential interference to Inter-Satellite (ISS) systems operating in this band.

34. As noted by the Department in the Consultation, preliminary results of ITU studies on the impact of 5G systems on ISS systems in this band show that harmful interference to space stations due to aggregate emissions from 5G systems is not likely⁸. SaskTel agrees with the Department’s proposal not to impose any limits on the aggregate power levels produced by flexible use (5G) systems.

3.4.2 Coexistence between flexible use terrestrial stations and earth stations in the Earth exploration-satellite (space-to-Earth) and space research (space-to-Earth) services in the 26.5–27.0 GHz band

Question A6:

A. ISED is seeking comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and EESS/SRS earth stations in the 26.5–27.0 GHz band when a pre-determined trigger threshold is exceeded.

B. If the proposed site-by-site coordination is supported, what coordination trigger and value would be the most appropriate (e.g. power flux density or distance threshold)?

C. ISED is also inviting proposals for specific additional technical rules for flexible use terrestrial stations and EESS/SRS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.

35. The Department notes in the Consultation that:

“The considerations for coexistence and deployment of flexible use terrestrial stations and EESS/SRS in the 26 GHz band are very similar to those related to flexible use terrestrial stations and fixed-satellite service earth stations in the 38 GHz band, as both satellite services operate in the space-to-Earth direction.”⁹

36. SaskTel therefore agrees with the Department’s proposal to adopt sharing mechanisms and geographic restrictions in the 26 GHz band that are very similar to those measures proposed for the 38 GHz band for coexistence between EESS/SRS stations and terrestrial flexible use (5G) systems.

⁸ The Consultation, section 3.4.1, paragraph 21

⁹ Ibid, paragraph 23

37. We agree with the Department's proposal to require site-by-site coordination between proposed flexible use terrestrial stations and EESS/SRS earth stations in the 26.5–27.0 GHz band when a pre-determined trigger threshold is exceeded. The number of earth stations expected to be deployed for the EESS/SRS service in this band is expected to be very low, making coordination manageable.
38. Based upon previous Radio Advisory Board of Canada (RABC) working group discussions, a power flux density trigger (PFD) mechanism would be most appropriate to initiate a site-by-site coordination process.
39. It has been proposed that the RABC will be asked to facilitate the formation of a working group consisting of representatives from both the satellite and terrestrial service provider communities. This group will study in more detail coexistence and coordination procedures for terrestrial and satellite earth stations in the 28 GHz and 37-40 GHz bands. It is expected this group can also include a study for the 26 GHz band, and that the outcome from the working group will include recommendations for PFD trigger values for coordination in all three spectrum bands, as well as other recommendations as appropriate to facilitate more efficient sharing between terrestrial and earth stations.

Question A7:

A. ISED is seeking comments on whether there should be restrictions on the geographic areas in which new EESS and SRS earth stations can be deployed in the 26.5–27.0 GHz band.

B. If geographic restrictions on EESS and SRS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted.

40. SaskTel believes that restrictions will be required on the geographical areas in which new EESS and SRS earth stations can be deployed in the 26.5-27.0 GHz band in order to ensure that EESS and SRS earth station deployments will impose only minimal constraints upon the deployment of terrestrial flexible use systems, as per the proposed CTFA footnote CXX.¹⁰

¹⁰ Ibid, section 3.2

41. As SaskTel has stated in our response to question A6 of the Consultation, it is expected that a proposed RABC working group to be formed to discuss coexistence and coordination details for the 28 GHz and 37-40 GHz bands can include studies on issues in the 26 GHz band. It is anticipated that this group can provide detailed proposals for appropriate geographical restrictions on EESS and SRS earth stations in the 26.5-27.0 GHz band.

3.4.3 Coexistence between flexible use terrestrial stations and the fixed-satellite service (Earth-to-space) in the 27.0–27.5 GHz band

Question A8:

A. ISED is seeking comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 27.0–28.35 GHz band when a pre-determined trigger threshold is exceeded.

B. If the proposed site-by-site coordination is supported, what coordination trigger and value would be the most appropriate (e.g. power flux density or distance threshold)?

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

42. SaskTel agrees with the Department’s proposal to adopt sharing mechanisms and geographic restrictions in the 27.0-27.5 GHz band that are identical or very similar to those measures proposed for the 27.5-28.35 GHz band for coexistence between FSS earth stations and terrestrial flexible use (5G) systems.

43. We agree with the Department’s proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 27.0-28.35 GHz band when a pre-determined trigger threshold is exceeded.

44. Based upon previous Radio Advisory Board of Canada (RABC) working group discussions, a power flux density trigger (PFD) mechanism would be most appropriate to initiate a site-by-site coordination process.

45. It has been proposed that the RABC will be asked to facilitate the formation of a working group consisting of representatives from both the satellite and terrestrial service provider communities. This group will study in more detail coexistence and

coordination procedures for terrestrial and satellite earth stations in the 28 GHz and 37-40 GHz bands. It is expected this group can also include a study for the 27.0-27.5 GHz band, and that the outcome from the working group will include recommendations for PFD trigger values for coordination in all three spectrum bands, as well as other recommendations as appropriate to facilitate more efficient sharing between terrestrial and earth stations.

Question A9:

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 27.0–28.35 GHz band.

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.

46. SaskTel believes that restrictions will be required on the geographical areas in which new FSS earth stations can be deployed in the 27.0-28.35 GHz band in order to ensure that FSS earth station deployments will impose only minimal constraints upon the deployment of terrestrial flexible use systems, as per the proposed CTFA footnote CXX.¹¹

47. As SaskTel has stated in our response to question A6 of the Consultation, it is expected that a proposed RABC working group will be formed to discuss coexistence and coordination details for the 28 GHz and 37-40 GHz bands. It is anticipated that this group can provide detailed proposals for appropriate geographical restrictions on FSS earth stations in the 27.0-28.35 GHz band.

Question A10:

A. ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services in the 27.0–28.35 GHz band to ensure coexistence with FSS space stations.

B. If limits are proposed, ISED is inviting detailed proposals on why they should be implemented, and what the limits should be.

¹¹ Ibid, section 3.2

48. Flexible use 5G systems in the 27.0-28.35 GHz band will employ dynamic beam forming and massive MIMO technologies resulting in very narrow antenna beamwidths directly aimed at the subscriber station. The use of beam forming and MIMO with the resulting narrow beamwidths will be essential to overcome the propagation challenges in the mmWave spectrum bands and provide a high quality of service to the subscriber. The narrow beamwidths will also in turn strongly limit interfering emissions towards space stations in the 27.0-28.35 GHz band.
49. SaskTel believes that these measures will be sufficient, and power limits on aggregate emissions from flexible use (5G) systems are not required. It should also be noted that aggregate emission limits could be problematic where there are multiple service providers involved. SaskTel would support further studies on aggregate emission limits from terrestrial stations to protect space stations in this band.

4. *Licensing considerations*

Question A11:

A. Further to section 9 of the mmWave Consultation, are there any new considerations or suggested approaches regarding the licensing of flexible use mmWave spectrum, given the addition of the 26 GHz band?

B. ISED is also seeking comments on licensing considerations in the 26 GHz and 28 GHz bands that would encourage innovative use cases while also supporting competition for existing mobile network services.

50. SaskTel refers the Department to the comments submitted by SaskTel in response to section 9 of the mmWave Consultation.¹² The comments made by SaskTel are applicable as well to the 26 GHz band, and there are no new considerations or suggested approaches for flexible use licensing that are unique to the 26 GHz band.
51. In response to the suggestion by the Department to license a portion of the 26 GHz and 28 GHz bands using a shared use model, e.g. an all-come, all-served licensing model, SaskTel reiterates that the 26 GHz, 28 GHz, and 37-40 GHz bands should all be licensed on an exclusive basis. SaskTel's experiences with shared models in other frequency bands have shown that there is almost no difference in operating

¹² SaskTel Comments in Response to Gazette Notice SLPB-001-17 "Consultation of Releasing Millimetre Wave Spectrum to Support 5G", Sept. 15, 2017, section 9.

within a shared band or in a licence-exempt spectrum band. Despite the coordination rules, operators deploying in a shared band must still deal with interference from existing installations, and there is no guarantee that interference will not increase from future installations.

52. There is actually very little difference between operating in a shared band and in a licence exempt band. The shared bands impose more regulatory burden on licensees and the Department, but the resulting operating environment is virtually the same in terms of the risk of interference, both presently and in the future.
53. Therefore, SaskTel recommends that the 26 GHz, 28 GHz, and 37-40 GHz bands all be licensed on an exclusive basis. It must also be noted that there is a very large amount of licence exempt mmWave spectrum available, or shortly available, from 57-71 GHz, for a total of 14 GHz of contiguous licence exempt spectrum. This is more than enough spectrum for operators wishing to deploy mmWave systems, presumably at a lower cost, using shared spectrum.
54. SaskTel has addressed the Department's question seeking comments on licensing considerations to encourage innovation and support competition in our comments submitted in response to the mmWave Consultation.¹³

CONCLUSION

55. 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 26 GHz band, concurrently with developments and decisions on policies for the 28 GHz, 37-40 GHz, and 64-71 GHz bands. This is for the following reasons:

- The 26 GHz band is on the agenda for the upcoming ITU WRC-19 Conference.
- There is strong interest in the 26 GHz band in the European Union, China, Japan, and Korea. Canadians will therefore benefit from the economies of

¹³ Ibid.

scale created by the device ecosystem created for these markets, despite the absence of the US market.

- Although the 26 GHz band is not available for flexible use fixed and mobile deployments, any cross-border interference and coordination issues can be mitigated or at least be made manageable, due to the inherently short transmission range of the 26 GHz mmWave spectrum. Coordination will only be required in a small zone along the border.

56. SaskTel recommends that the Department proceed forward with the proposed flexible use licensing model for the 26 GHz band, allowing both mobile and fixed systems to be deployed.

57. The 26 GHz band (26.5-27.5 GHz) is adjacent to the 28 GHz band (27.5-28.35 GHz), and SaskTel agrees that these two bands should be reviewed and considered as one whole band.

58. It is essential that the 26 GHz band plan adopted for Canada be aligned with 3GPP standards. The US FCC band plan for the 28 GHz band using 2 x 425 MHz frequency blocks is not well matched with the 3GPP band plan and standardized channel bandwidths. It is far more important to align the Canadian band plan with 3GPP standards, rather than harmonize with the US FCC band plan.

- SaskTel recommends a band plan be adopted in Canada that is harmonized with 3GPP band plans and channel bandwidths, and covers the entire 26.5-28.35 GHz spectrum band.
- SaskTel prefers larger block sizes, and believes it will be appropriate that a mixture of frequency block sizes be included in the band plan, from 100 to 400 MHz, and with the block sizes based upon multiples of the 3GPP standardized channel bandwidths.
- SaskTel recommends that a minimum frequency block size of 100 MHz be employed.

59. SaskTel agrees that aggregate emission limits are not necessary for terrestrial 5G systems in the 26 and 28 GHz bands.

60. For both the 26 and 28 GHz bands, SaskTel recommends the use of a site-by-site coordination process between proposed flexible use terrestrial stations and earth stations to ensure that earth station deployments do not hinder terrestrial 5G system deployments. SaskTel recommends that a power flux density (PFD) threshold be used to trigger the coordination process. The value of the PFD trigger thresholds, along with other coordination process details, are expected to be discussed at a proposed RABC working group, consisting of representatives from both the satellite industry and terrestrial mobile service providers.
61. SaskTel also believes that geographical restrictions on the deployment of new earth stations in the 26 GHz band will be required to ensure that earth station deployments do not hinder deployment of terrestrial 5G systems.
62. SaskTel recommends that the 26 GHz, 28 GHz, and 37-40 GHz bands be licensed on an exclusive basis. In response to the suggestion by the Department that some of the 26 GHz and 28 GHz bands could be licensed using a shared use model, SaskTel notes that there is a large amount of contiguous licence exempt spectrum (14 GHz) available or shortly available in the 57-71 GHz range, which is more than enough spectrum for operators wishing to deploy mmWave systems, presumably at a lower cost, using shared spectrum.
63. The 26 GHz band is very similar to the 28 GHz and 37-40 GHz bands. Therefore, the licensing considerations for the bands are also similar. SaskTel has submitted comments in our response to the mmWave Consultation¹⁴ on licensing for this spectrum, and these comments remain applicable.
64. 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.

¹⁴ Ibid.