



**W.N. (Bill) Beckman**  
Senior Director -  
Regulatory Affairs

2121 Saskatchewan Drive  
Regina, Saskatchewan  
S4P 3Y2

Telephone: (306) 777-4208  
Fax: (306) 565-6216  
Internet: document.control@sasktel.com

***via email***

January 18, 2021

Senior Director  
Spectrum Planning and Engineering  
Engineering, Planning and Standards Branch  
Innovation, Science and Economic Development  
235 Queen Street  
Ottawa, ON K1A 0H5

Dear Senior Director:

**Re: *Gazette Notice SMSE-014-20, Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band***

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Attached are the Comments of Saskatchewan Telecommunications (SaskTel), in response to the notice regarding the above referenced application.

SaskTel thanks the Department for this opportunity to provide comments and input into the consultation process.

Sincerely,

A handwritten signature in purple ink, appearing to be "W.N. Beckman", written in a cursive style.

W.N. (Bill) Beckman  
Senior Director - Regulatory Affairs  
RAB/nb

Attachment

# SaskTel Comments:

Gazette Notice SMSE-014-20

Consultation on the  
Technical and Policy Framework for  
Licence-Exempt Use in the 6 GHz Band

January 18, 2021

## EXECUTIVE SUMMARY

1. The following is a summary of SaskTel's submission in response to Gazette Notice SMSE-014-20 *Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band* ("the Consultation").
2. The 5925-6425 MHz band is a high priority band for fixed PTP backhaul microwave links, heavily utilized to provide connectivity to remote rural communities providing critical voice and data services.
3. As the incumbent telecommunications carrier, SaskTel operates a large number of fixed point-to-point 6 GHz microwave links providing vital connectivity to remote communities, mostly in northern Saskatchewan. These microwave networks carry critical communication links supporting public health and safety. SaskTel expects our use of the 6 GHz band to grow as data usage increases. The operation of these licensed 6 GHz microwave links must not be degraded or interrupted by interference from licence-exempt systems or any other source of interference.
4. SaskTel agrees in general that licence-exempt systems can be introduced into the 6 GHz band, but only on the condition that licence-exempt users must not cause interference to licensed 6 GHz systems, including both fixed point-to-point microwave and satellite earth station uplinks.
5. In the Consultation the Department is proposing to introduce licence-exempt RLAN systems in the 5925-7125 MHz band, with operations proposed using standard-power, low-power, and very low-power equipment subject to varying regulations in different parts of the band. Proposed measures to allow licence-exempt systems to operate without causing interference are outlined in the Consultation, including imposition of e.i.r.p. limits and the use of Automated Frequency Coordination (AFC) systems. SaskTel would agree with these proposals if it can be shown that interference with licensed systems can be effectively prevented.
6. As the Department notes in the Consultation<sup>1</sup>, at WRC-23 the ITU will study and discuss as part of Agenda Item 1.2 the proposed allocation of IMT mobile services

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<sup>1</sup> The Consultation, paragraph 21

in the 7025-7125 MHz band globally. SaskTel recommends that the Department reserve a decision on allowing licence-exempt systems in the 7025-7125 MHz band until after the outcome of WRC-23 Agenda Item 1.2 is determined. This is the most prudent course of action and allows a proper decision to be made by the Department once the direction of the 7025-7125 MHz band globally is clearer.

7. Therefore, for the immediate future SaskTel is recommending that licence-exempt systems be allowed in the 5925-7025 MHz band, and that footnote Cxx be added to the Canadian Table of Frequency Allocations and worded as follows:

*Footnote Cxx: Licence-exempt RLAN applications in the 5925-7025 MHz band must operate in accordance with the established spectrum policy and technical framework; and must not cause harmful interference to, or claim protection from, licensed systems operating in the band.*

8. The footnote text above is as proposed by the Department in the Consultation<sup>2</sup>, with only the frequency range being modified.
9. In order to ensure the protection of licensed 6 GHz point-to-point microwave systems, SaskTel recommends that a minimum I/N objective of -6 dB be utilized for the calculation of interference levels and the determination of exclusion zones for licence-exempt equipment. The Department should consider however using the ITU suggested value<sup>3</sup> of I/N of -10 dB, particularly in urban areas where multiple standard power RLAN systems are likely to be in operation to protect licensed systems from aggregate interference sources.
10. Should interference occur to a licensed 6 GHz system, the AFC system processes and procedures must provide a mechanism whereby interference issues can be identified and rectified in a timely manner. SaskTel recommends that this mechanism require the implementation of a logging function where AFC's will record the frequencies assigned and the actual frequencies utilized by the RLAN's under its control. Frequency usage information will be very helpful in resolving interference issues.

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<sup>2</sup> Ibid, paragraph 47

<sup>3</sup> ITU Rec. ITU-R F.758-7, Table 5

## INTRODUCTION

11. Saskatchewan Telecommunications (“SaskTel” or “the Company”) is pleased to provide this response to Gazette Notice SMSE-014-20 *Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band* (“the Consultation”).
12. We have reviewed the Consultation on the Department’s proposed Technical and Policy Framework for Licence-Exempt Use in the 6 GHz band. As a regional-based service provider, SaskTel hereby provides the Department input, suggestions, and recommendations on issues raised in the Consultation.
13. SaskTel has participated in the creation of the Radio Advisory Board of Canada (RABC) response to the Consultation and supports the RABC submission.
14. 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 CONSULTATION ON THE TECHNICAL AND POLICY FRAMEWORK FOR LICENCE-EXEMPT USE IN THE 6 GHz BAND

### **5. *International Context***

#### **5.3. *Development of the 6 GHz licence-exempt ecosystem***

##### **Q1**

**ISED is seeking comments on the timelines for the availability of:**

- a. low-power equipment ecosystems, both Wi-Fi 6E and 5G NR-U**
- b. standard-power equipment ecosystems, both Wi-Fi 6E and 5G NR-U, under the control of an AFC**
- c. AFC**

15. SaskTel agrees with the response to this question provided in the RABC submission to the Consultation which included input from vendors developing 6 GHz licence-exempt equipment.

## **7. Changes to the spectrum utilization for the 6 GHz band**

### **Q2**

**ISED is seeking comments on its proposals to allow licence-exempt RLAN use in the 5925-7125 MHz band.**

16. SaskTel agrees with the Department's proposal to allow licence-exempt RLAN use in the 5925-7025 MHz band only, and not in the 7025-7125 MHz band, under the condition that licence-exempt RLAN applications in the 5925-7025 MHz band must operate in accordance with the established spectrum policy and technical framework, and must not cause harmful interference to, or claim protection from, licensed systems operating in the band.
17. This proposal is in alignment with other jurisdictions, including the United States, that have made decisions or are studying the introduction of licence-exempt use either in whole or in parts of the 5925-7125 MHz band.
18. As mentioned by the Department in the Consultation<sup>4</sup>, WRC-23 Agenda Item 1.2 will study the potential allocation of IMT-based licensed spectrum in the 7025-7125 MHz band globally. Considering WRC-23 is only two years away, SaskTel would recommend that a decision on any licence-exempt use in the 7025-7125 MHz band be reserved until after the outcome of WRC-23 Agenda Item 1.2 is determined. This is the most prudent course of action and allows a proper decision to be made by the Department once the direction of the 7025-7125 MHz band globally is clearer.
19. SaskTel operates a large number of fixed point-to-point 6 GHz microwave links providing vital connectivity to remote communities. The operation of these licensed 6 GHz microwave links must not be degraded or interrupted by interference from licence-exempt systems or any other source of interference.

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<sup>4</sup> The Consultation, paragraph 21

**Q3**

**ISED is seeking comments on the proposed footnote Cxx and the changes to the CTFA as shown in table 2.**

20. SaskTel agrees with the proposed revisions to the Canadian Table of Frequency Allocations (CTFA) as shown in Table 2 of the Consultation, including the proposed addition of footnote Cxx to the CTFA. SaskTel agrees with the proposed text for footnote Cxx as given in paragraph 47 of the Consultation, with a slight modification of the frequency range as explained in SaskTel's response to Q2:

*Footnote Cxx: Licence-exempt RLAN applications in the 5925-7025 MHz band must operate in accordance with the established spectrum policy and technical framework; and must not cause harmful interference to, or claim protection from, licensed systems operating in the band.*

21. In order to ensure 6 GHz licensed systems are adequately protected, including critical point-to-point microwave links and C-band satellite earth stations, licence-exempt RLAN applications must operate in accordance with the established spectrum policy and technical framework, and licence-exempt RLAN applications must not cause harmful interference to licensed systems. Therefore, CTFA footnote Cxx must reflect these requirements.

**8. *Proposals for the introduction of licence-exempt operation in the 6 GHz band***

**8.1. *Proposals related to standard-power RLAN operation***

**Q4**

**ISED is seeking comments on the proposed rules for standard-power RLANs:**

- a. indoor and outdoor operation would be permitted**
- b. RLAN access points would only be permitted to operate under the control of an AFC system in the 5925-6875 MHz frequency range**
- c. maximum permitted e.i.r.p. would be 36 dBm**
- d. maximum permitted power spectral density would be limited to 23 dBm/MHz**
- e. use of a vertical elevation mask, with a maximum e.i.r.p. of 125 mW at elevation angles above 30 degrees over the horizon, would be required**

22. SaskTel agrees with the proposed rules for standard-power RLAN's as stated in section 8.1 of the Consultation. This includes a maximum permitted e.i.r.p. of 36 dBm and a maximum permitted power spectral density of 23 dBm/MHz, as well as

allowing indoor and outdoor operation in the 5925-6875 MHz as per Figure 5 in the Consultation.

23. In order to meet the mandatory requirement for licence-exempt RLANS to not cause interference to existing licensed 6 GHz systems, standard-power RLANS must only be allowed to operate under direct control of an AFC system. SaskTel operates a large number of fixed point-to-point 6 GHz microwave links providing vital connectivity to remote communities. The AFC system must not allow interference from standard-power RLAN's to the operation of these licensed 6 GHz microwave links.
24. SaskTel agrees with the imposition of a mandatory vertical elevation mask limiting the e.i.r.p. to a maximum of 125 mW at elevation angles above 30 degrees over the horizon, but SaskTel notes that the satellite community believes a lower elevation angle mask is required for the northerly latitudes of Canada.

**Q5**  
**ISED is seeking comments on allowing access to the additional 100 MHz of spectrum in the 6425-6525 MHz sub-band for standard-power operation.**

25. SaskTel agrees with the Department's proposal to allow standard-power RLAN's to operate in the 6425-6525 MHz band.

**Q6**  
**ISED is seeking comments on the equipment availability of standard-power RLANS in the 6425-6525 MHz band and the impact on the development of AFC systems for Canada due to a potential lack of international harmonization for that sub-band.**

26. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.



## **8.2. Proposals related to low-power indoor-only RLAN operation**

**Q7**

**ISED is seeking comments on the proposed rules for low-power indoor-only RLANs:**

- a. operation would be permitted indoor only across the 5925-7125 MHz band**
- b. the use of a contention-based protocol (e.g. listen-before-talk) would be required**
- c. maximum permitted e.i.r.p. would be 30 dBm**
- d. maximum permitted power spectral density would be limited to 5 dBm/MHz**

- 27. SaskTel agrees with the Department's proposal to allow low-power indoor-only RLAN's to operate in the 5925-7025 MHz band only, and not in the 7025-7125 MHz band, with the requirement to implement a contention-based protocol, along with a maximum e.i.r.p. of 30 dBm and a maximum power spectral density of 5 dBm/MHz.
- 28. As explained in our response to Q2, SaskTel believes that a decision on licence-exempt use in the 7025-7125 MHz band should be reserved until the results of WRC-23 are determined, in particular the results of Agenda Item 1.2. This is the most prudent course of action and allows a proper decision to be made by the Department once the direction of the 7025-7125 MHz band globally is clearer.
- 29. SaskTel believes that low-power indoor-only RLAN systems could be a source of interference to licensed 6 GHz systems, and that the Department should provide a mechanism and procedures for 6 GHz licensees to identify and resolve any interference issues with licensed 6 GHz systems that might arise from low-power indoor-only RLAN systems.

## **8.3. Proposals related to very low-power RLAN operation**

**Q8**

**ISED is seeking comments on the proposed rules to allow very low-power RLAN devices:**

- a. operation would be permitted indoors and outdoors across the frequency range 5925-7125 MHz band**
- b. the use of a contention-based protocol (e.g. listen-before-talk) would be required**
- c. maximum permitted e.i.r.p. would be 14 dBm**
- d. maximum permitted power spectral density would be limited to -8 dBm/MHz**

30. SaskTel agrees with the Department's proposal to allow very low-power RLAN's to operate indoors and outdoors in the 5925-7025 MHz band only, and not in the 7025-7125 MHz band, with the requirement to implement a contention-based protocol, along with a maximum e.i.r.p. of 14 dBm and a maximum power spectral density of -8 dBm/MHz.
31. As explained in our response to Q2, SaskTel believes that a decision on licence-exempt use in the 7025-7125 MHz band should be reserved until the results of WRC-23 are determined, in particular the results of Agenda Item 1.2. This is the most prudent course of action and allows a proper decision to be made by the Department once the direction of the 7025-7125 MHz band globally is clearer.

**9. *Proposals related to the automated frequency coordination system***

**Q9**

**ISED is seeking comments on potential business models for AFC administrators to operate their AFC systems in Canada.**

32. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

**Q10**

**ISED is seeking comments on its proposal to permit the approval of multiple, third party AFC systems, taking into account the potential for the development of a sustainable market for AFC systems in Canada.**

33. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

**Q11**

**ISED is seeking comments on potential exit strategies if the AFC administrator decides to cease operation in Canada.**

34. SaskTel operates a large number of fixed point-to-point 6 GHz microwave links providing vital connectivity to remote communities. The operation of these

licensed 6 GHz microwave links must not be degraded or interrupted by interference from licence-exempt RLAN systems or any other source of interference. Therefore, it is critical that standard-power RLAN systems cease operation immediately in the event of a shutdown or a failure of the AFC system controlling the licence-exempt RLAN equipment. Any proposed exit strategy for an AFC system must take into account the continuous need to protect all licensed systems operating in the 6 GHz band, and the standard-power RLAN's must cease operation in the event that the protection of licensed 6 GHz systems cannot be ensured.

**Q12**

**ISED is seeking comments on adopting an AFC system model that is harmonized to the maximum extent possible with the AFC system model being implemented in the U.S. and other international markets.**

35. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

**Q13**

**ISED is seeking comments on the implementation considerations for the operation of an AFC system, specifically:**

**a. information required from licensed users**

36. SaskTel agrees with the proposal to use ISED's Spectrum Management System (SMS) database to provide the necessary information for the AFC system to calculate the interference levels to establish exclusion zones and determine the permissible frequencies to allow operation of the standard-power RLAN equipment.
37. SaskTel recognizes that it is vital that the information in the SMS database be as accurate as possible and up to date.

**b. interference protection criteria for computation of exclusion zones**

38. The Department has proposed an interference-to-noise ratio (I/N) objective of -6 dB for the calculation of exclusion zones around licensed systems. SaskTel notes that the Frequency Coordination System Association (FCSA) uses an I/N objective of -6 dB, and we note that the FCC also specified the same value for I/N for interference protection in their 6 GHz licence-exempt decisions. The ITU however suggests a I/N objective of -10 dB for sharing between different services above 3 GHz.<sup>5</sup>
39. SaskTel recommends using a minimum I/N objective of -6 dB for interference protection. The Department should consider however using the ITU suggested value of I/N of -10 dB, particularly near urban areas where multiple standard power RLAN systems are likely to be in operation to protect licensed systems from aggregate interference sources.

#### **c. information required from standard-power APs**

40. Standard-power access points must provide as a minimum geolocation data, antenna height and directivity, and the antenna gain pattern to the AFC for interference calculations.
41. The standard-power access points should also provide to the AFC the operating frequencies assigned and utilized for logging purposes and interference identification and resolution. Logging the operating frequencies being used by an AP will greatly assist the resolution of interference issues should they occur.

#### **d. frequency of AFC update of licensee information**

42. SaskTel recommends that the ISED SMS database be queried at a minimum of once per 24 hours to check for additions and updates to the licensed system data.

#### **e. security and privacy requirements**

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<sup>5</sup> ITU Rec. ITU-R F.758-7, Table 5

43. The communications between the AFC and the SMS database, as well as communications between the AFC and the standard-power RLAN access point must be secure and private. This will protect the AFC system and RLAN equipment from a cyberattack, and ensure private information is not publicly revealed.
44. In addition, provisions must be made to ensure that undisclosed licensees not included in the public view of the ISED SMS database are protected from interference from standard-power RLAN's by the AFC. It is anticipated that special accommodations in the AFC will have to be made to ensure the frequencies and locations of any undisclosed licensees are not revealed, while still providing interference protection to the undisclosed licensee.

**Q14**

**ISED is seeking comments on any additional considerations, limits or general concerns that should be taken into account in setting detailed standards and procedures for AFC operation.**

45. SaskTel's primary concern is the prevention of interference to our existing critical 6 GHz point-to-point backhaul microwave links. Should interference occur to a licensed 6 GHz system, the AFC system processes and procedures must provide a mechanism whereby interference issues can be identified and rectified in a timely manner.
46. SaskTel recommends that this mechanism require the implementation of a logging mechanism where AFC's will record the frequencies assigned and the actual frequencies utilized by the RLAN's under its control. Frequency usage information will be very helpful in resolving interference issues.
47. In addition, for interference identification and mitigation, SaskTel would suggest that the AFC's provide the ability to provide extracts of database information on RLAN identification and location for RLAN stations within the vicinity of a given location.

### **9.1 Coexistence by standard-power access points with automated frequency coordination**

**Q15**

**ISED is seeking comments on its proposal to require AFC systems to protect the following types of licensed stations from standard-power APs:**

- a. fixed microwave stations**
- b. fixed point-to-point television auxiliary stations**
- c. radio astronomy stations**

48. SaskTel operates a large number of fixed point-to-point 6 GHz microwave links providing vital connectivity to remote communities. The operation of these licensed 6 GHz microwave links must not be degraded or interrupted by interference from licence-exempt systems or any other source of interference.
49. SaskTel agrees with the proposal by ISED to require AFC systems to protect licensed fixed point-to-point microwave stations, fixed point-to-point television auxiliary stations, and radio astronomy stations. Furthermore, AFC systems must protect all 6 GHz licensed stations from interference as a condition of their deployment in this band. Utilizing data from the ISED SMS database, along with the appropriate interference to noise (I/N) objective<sup>6</sup>, it should be possible to determine exclusion zones and appropriate permissible frequencies for the operation of standard-power RLAN equipment while protecting licensed stations.

### **9.2 General matters related to automated frequency coordination implementation**

**Q16**

**ISED is seeking comments on the sample agreement related to the designation and operation of an AFC system in Canada.**

50. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

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<sup>6</sup> For point to point microwave stations, a minimum I/N of -6 dB must be used, with consideration to use I/N of -10 dB near urban areas due to the increased likelihood of aggregate interference sources.

**Q17**

**ISED is seeking comments on the proposed approach to incremental implementation of an AFC system in Canada.**

51. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

**Q18**

**ISED is seeking comments on the objective to maximize the potential for synergies, where possible, in defining the technical and administrative requirements for the respective databases addressing different bands under different technical regimes.**

52. SaskTel has no comment on this question. SaskTel reserves the right to submit comments or reply comments regarding this question during the reply comment phase of this consultation process.

## **CONCLUSION**

53. SaskTel has reviewed the Consultation with the Department's proposed Technical and Policy Framework for Licence-Exempt use in the 6 GHz band. As a regional-based service provider, SaskTel has provided the Department input, suggestions, and recommendations on the questions raised in the Consultation.
54. 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.