CanWISP
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January 19, 2021

Innovation, Science and Economic Development Canada
Senior Director, Spectrum Planning and Engineering
Engineering, Planning and Standards Branch
235 Queen Street, (6th Floor, East Tower)
Ottawa ON K1A 0H5

VIA E-MAIL: ic.spectrumengineering-genieduspectre.ic@canada.ca

Dear Sir:

Subject: **Innovation, Science and Economic Development Canada, *Radiocommunication Act*, Notice No. SMSE-014-20 — Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band, *Canada Gazette*, Part I, Vol. 154, No. 49, December 5, 2020, at p. 3623**

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1. Canadian Association of Wireless Internet Service Providers ("CanWISP") is pleased to submit the attached comments in response to the above Notice.

2. CanWISP thanks ISED for the opportunity to comment on the technical and policy framework for licence-exempt use of the 5925-7125 MHz frequency band.

3. If there are any questions concerning these comments, please do not hesitate to contact the undersigned.

Yours truly,

Jonathan Black
Executive Director

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BEFORE INNOVATION, SCIENCE, AND ECONOMIC DEVELOPMENT CANADA

IN THE MATTER OF

CONSULTATION ON THE TECHNICAL AND POLICY FRAMEWORK FOR LICENCE-EXEMPT USE IN THE 6 GHZ BAND, CANADA GAZETTE, PART I, VOL. 154, NO. 49, DECEMBER 5, 2020

COMMENTS OF THE
CANADIAN ASSOCIATION OF WIRELESS INTERNET SERVICE PROVIDERS

19 JANUARY 2021

TABLE OF CONTENTS

EXECUTIVE SUMMARY

ES1. Canadian Association of Wireless Internet Providers ("CanWISP") represents the interests of Canadian Wireless Internet Service Providers ("WISPs"), which provide fixed-wireless Internet access to households and business across Canada on networks that they build, operate and maintain. Our members live, invest, and employ people in the predominantly rural communities they serve.

ES2. Our activities to promote the interests of WISPs include participation in legislative, regulatory and policy development processes. CanWISP is especially interested in ensuring that spectrum, which is a public resource, is used in the most efficient and beneficial manner for all Canadians.

ES3. CanWISP supports the proposed licence-exempt use of the 5925-7125 MHz frequency band. The proposed use harmonizes the equipment ecosystem available to Canadians with international standards, so that Canadian consumers can access to the most innovative consumer devices available.

ES4. As Innovation, Science and Economic Development Canada ("ISED") observes, "rural broadband service providers leverage licence-exempt spectrum to deliver broadband to residential and business customers in rural areas."[1]. Our members use license-exempt spectrum together with lightly-licensed and, in some cases, licensed spectrum[2], to offer broadband services in rural communities. License-exempt spectrum is particularly useful for fixed wireless broadband connectivity in very rural areas with low congestion in these bands.

ES5. In order to further support broadband connectivity in rural areas, CanWISP asks that ISED increase the effective isotropic radiated power ("EIRP") limits in the proposed 5925-7125 MHz frequency band to 60 W/MHz in low population areas EIRP through the use of directive antennas. This antenna directivity may be achieved via antennas with fixed directional gain (as with point-

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1 Innovation, Science and Economic Development Canada, Spectrum Management and Telecommunciations, "Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band", SMSE-014-20, November 20 ["SMSE-014-20"], at para 6.

2 Lightly-licensed refers to all-come all-served licensing mechanisms, in particular the licensing mechanisms used for the Wireless Broadband Service (WBS) 3650-3700 MHz band and the high power and outdoor RLAN devices (HPOD) 5150-5250 MHz band. In these bands, users are not entitled to protection from interference from other users of the bands. By contrast, licensed spectrum refers to bands in which users are offered protection from interference, either through station licences or exclusive spectrum licences.

to-point links or narrow sectoral beamwidths), or through the use of beamforming antennas, that is, antennas that emit multiple directional beams simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers. This mechanism has precedent in the lightly-licensed 3650-3700 MHz WBS band[3] and the license-exempt 5725-5850 MHz band[4].

ES6. By increasing the EIRP limit in low population areas, ISED will support the deployment of broadband networks to consumers in rural communities.

ES7. This band, with increased power levels, presents a significant opportunity for rural fixed wireless internet service providers to offer speeds well above 50 Mbps. With standard-power outdoor access points permitted to operate in the 950 MHz between 5925 and 6875 MHz, rural fixed wireless operators could offer consumer speeds well above 100 Mbps, anticipating the next generation of basic service objectives.

ES8. CanWISP has some concern that this band may not be available to our members due to the absence of a database administrator in Canada. Many CanWISP members have been frustrated by the unavailability of the television white spaces ("TVWS") band for this same reason. CanWISP encourages ISED to consider an alternative approach if no administrator enters the Canadian market, as discussed in our response to Question 10.

1.0 AUTOMATED FREQUENCY CO-ORDINATION MECHANISM

1. CanWISP supports the proposal that licence-exempt users in the 5925-7125 MHz band be prohibited from causing interference to existing licensed users through the use of an Automated Frequency Coordination ("AFC") mechanism, which would most likely be in the form of a commercially operated database.

[3] Paragraph 5.2.3 of Industry Canada, Spectrum Management and Telecommunications, Standard Radio System Plan, "Technical Requirements for Wireless Broadband Services (WBS) in the Band 3650–3700 MHz", SRSP-303.65, Issue 2, June 2010 ["SRSP-303-65"] makes it clear that the aggregate EIRP of an antenna using multiple non-overlapping beams transmitting different information to each receiver may exceed the EIRP limits by no more than 8 dB.

[4] Paragraph 5.4(e)of "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices", RSS_247, Issue 2, February 2017 Specifies that fixed point-to-point systems are permitted to have an EIRP higher than 4 W provided that the higher EIRPR. is achieved by employing higher gain directional antennas and not higher transmitter output powers.

2. CanWISP broadly supports the harmonization of requirements with those in place in the U.S. market, currently mandated by the United States Federal Communications Commission ("FCC")[5], and ongoing harmonization with any subsequent modifications to this regulation.

3. In certain instances, CanWISP supports less stringent regulations than those proposed by the FCC. In particular, CanWISP supports (a) higher EIRP limits, as described in the Executive Summary above, and (b) access to the additional 100 MHz of spectrum in the 6425-6525 MHz sub-band for standard-power operation, as described in our response to Question 5 below.

4. If Canada adopts regulations that are less stringent than the FCC regulations, then databases that are compliant with FCC standards should be considered to be compliant with Canadian standards, in order to speed the availability of AFC database systems in Canada.

2.0 RESPONSES TO QUESTIONS

5. CanWISP provides our answers to these questions below.

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

6. CanWISP expects that equipment ecosystems for Wi-Fi 6E and 5G NR-U will become widely available in the short term, due to widespread international adoptions of these standards.

7. CanWISP supports the proposed framework for AFC, that is, a database that is limited to providing protection to existing incumbent users of the band. This framework permits standard-power and outdoor devices to operate without causing interference to existing licensees, and harmonizes the Canadian approach with the FCC approach. CanWISP provides further comments regarding the AFC mechanism in our responses to Questions 9 and 10 below.

8. CanWISP is concerned that a Canadian AFC database may not be available in the short-term following the availability of equipment for this band. If the ISED technical rules for the database are less stringent in Canada relative to the U.S. requirements, or the same as the U.S. requirements, this may encourage the registration of U.S. approved database administrators in the

[5] Report and Order, ET Docket No. 18-295 and GN Docket No. 17-183, FCC 20-51 ["FCC 20-51"].

Canadian market. If Canada adopts standards that are less stringent than the FCC standard, then databases that are compliant with FCC standards should be considered to be compliant with Canadian standards, in order to speed the availability of AFC database systems in Canada.

Q2

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

9. CanWISP fully supports this proposal, as it harmonizes the Canadian band plan with international standards.

Q3

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

10. CanWISP fully supports this proposal.

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*

11. CanWISP fully supports the proposed rule (a). This harmonizes Canadian standards with the international use of the band.

12. CanWISP supports the proposed rule (b). Nonetheless, we are concerned that an AFC system may not be available to Canadian operators in reasonable timeframe. We address this concern in our response to Question 10 below.

13. In response to proposed rules (c) and (d), CanWISP urges ISED to permit the use of higher EIRP in low population areas. This would enhance the ability of rural operators to offer 50 Mbps and higher services in rural, under-served communities where there are low levels of frequency congestion.

14. This band, with increased power levels, presents a significant opportunity for rural fixed wireless internet service providers to offer speeds well above 50 Mbps. With standard-power outdoor access points permitted to operate in the 950 MHz between 5925 and 6875 MHz, rural fixed wireless operators could offer consumer speeds well above 100 Mbps, anticipating the next generation of basic service objectives.

15. We propose a limit of 60 W/MHz in low population areas. ISED provided for this same increased power level in low population areas in the WBS 3650-3700 MHz band[6]. This elevated EIRP limit will support rural service providers' ability to bring ever-faster broadband connectivity speeds to rural households and communities.

16. We propose that this elevated EIRP be achieved via antennas with fixed directional gain (as with point-to-point links or narrow sectoral beamwidths), or through the use of antennas that emit multiple directional beams simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers.

17. Since the proposal to permit higher EIRP in low-population areas and using directive antennas represents a less stringent requirement than the current U.S. standard[7], an AFC database developed for use in the U.S. should still be valid in the Canadian market, as described in our response to Q1 above. It is the hope of CanWISP members that a Canadian-specific AFC system will be developed.

18. Should the FCC revise its regulation to permit higher power outdoor use, ISED should move quickly to evaluate and, if appropriate, modify Canadian regulations to harmonize them with the updated U.S. regulation.

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.

[6] SRSP-303.65, at para 5.1.1(b).
[7] FCC 20-51, at paras 20-22.

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.

19. CanWISP fully supports the proposal to allow access to the 6425-6525 MHz portion of the band. Any additional spectrum that can be used by operators to enhance rural connectivity should be made available. CanWISP agrees with ISED's assessment that "standard-power APs and the AFC systems can be easily adapted for extending their operation into the 6425-6525 MHz sub-band.[8]"

20. Since the proposal to allow access to this 100 MHz represents a less restrictive requirement than that described by the FCC Report and Order FCC-20-51, an AFC database developed for use in the U.S. should still be valid in the Canadian market, as described in our response to Question 1 above. It is the hope of CanWISP members that a Canadia-specific AFC system will be developed.

21. Since the FCC Report and Order FCC-20-51 excludes the use of only this 100 MHz, and permits the use of both the upper and lower adjacent frequencies, we expect that equipment manufacturers will use software in the radio equipment to disable this frequency range. It is the hope of CanWISP members that equipment manufacturers will release a version of their equipment to the Canadian market with this frequency range enabled.

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

22. CanWISP has no comment on the proposed rules for indoor-only RLANs.

[8] SMSE-014-20, at para 56.

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

23. CanWISP has no comment on the proposed rules for very low-power RLAN devices.

Q9

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

24. CanWISP broadly supports the harmonization of AFC requirements with U.S. requirements. Harmonization will encourage the timely development of products for the Canadian market.

25. CanWISP supports the most flexible possible database rules, leaving the implementation of the AFC system to administrators and equipment manufacturers.

26. We note that, in order to protect existing licensees in the band, synchronization between databases is not required; all databases would gather the relevant information on existing licensees from the ISED-provided interface. In the longer term, synchronization between databases may promote more spectral efficiency by providing a frequency co-ordination service between unlicensed users. Any synchronization between databases should be conducted at no cost, and administrators who wish to offer synchronization should be obliged to publish, or provide freely upon request, standards for synchronization.

27. We believe that an open standard should be mandated for database synchronization. Similarly, ISED should mandate the use of a standard interface to facilitate synchronization.

28. As an alternative to synchronization between databases, ISED may wish to provide, and encourage the use of, a repository for deployment information of standard-power outdoor access

points that could automatically be populated by AFC databases. Such a repository would resemble the existing publicly available information for deployments of access points in the 3650-3700 MHz WBS band, which is populated by user-generated uploads.

29. CanWISP members oppose business models used by database administrators in the U.S., whereby operators pay the administrator a fee per customer, rather than a fee per base station. Per-base-station fees are simpler to administer than per-customer fees, as customer numbers change on a day-to-day basis.

30. CanWISP members are also concerned about the potential for database administrators to abuse their market power in the provision of AFC by increasing prices for such services excessively. ISED should limit the fee increase associated with database use year-on-year to reflect the rate of inflation.

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.

31. CanWISP supports the ISED proposal to permit the approval of multiple, third party AFC systems.

32. Nonetheless, CanWISP members are concerned that this band may not be available to our members due to the absence of a database administrator in Canada. Many CanWISP members have been frustrated by the unavailability of the TVWS band for this same reason. CanWISP encourages ISED to consider an alternative approach in the absence of an approved AFC administrator.

33. ISED is the steward of the allocation and use of spectrum, which is a public resource, in Canada for the benefit of Canadians. If no commercially viable AFC databases develops in the Canadian market to provide nationwide coverage after one year of spectrum availability, ISED should establish a public database system that enables the use of the broadest possible range of commercially available equipment. As demand for new types of equipment is demonstrated, those types should be added.

Q11

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

34. As described above, ISED should provide a database service if no commercially viable option is available in Canada.

35. In order to ensure continuity if a database provider exits the Canadian market, ISED should require all database administrators to provide ISED with a copy of their up-to-date production code to be held in escrow, along with a third-party Information Technology Security Assessment report. The provision of the code will ensure that ISED can continue to operate the database should the only administrator in Canada exit the market. The provision of the ITSA report will ensure that the code can be maintained and meets industry standards of security.

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.

36. CanWISP fully supports the harmonization of the AFC system model with U.S. and other international markets.

37. We submit that any Canadian rules that are less stringent than those implemented in other markets should not preclude an AFC administrator certified to U.S. standards from approval in Canada. However, any less stringent regulations in Canada would provide an incentive for administrators to develop a Canadian-specific variant, and an incentive for Canadian companies to develop an AFC database for the domestic market.

Q13

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

a. information required from licensed users
b. interference protection criteria for computation of exclusion zones
c. information required from standard-power APs
d. frequency of AFC update of licensee information
e. security and privacy requirements

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.

38. CanWISP members have no significant licensed operations in this band. CanwWISP has no comment pertaining to these implementation considerations of AFC operation.

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

39. CanWISP members have no significant licensed operations in this band. CanWISP has no comment pertaining to the protection offered to existing licensed stations.

Q16

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

40. As described in our response to Q11 above, CanWISP proposes that ISED require that a copy of the production code be held in escrow, so that ISED can continue to operate the database should the only administrator in Canada exit the market. In order to ensure that such a remedy can be exercised in a manner that minimizes disruption to users if an AFC administrator withdraws from the market, ISED should require that an administrator provide a notice of its intent to withdraw that is no less than either six months before market exit or when the administrator first becomes aware that it will exit the market.

Q17

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

41. CanWISP fully supports the proposed incremental approach. Any measures that encourage and enable small innovators to develop AFC products in Canada are welcomed by CanWISP.

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.

42. CanWISP broadly supports the alignment of technical and administrative requirements of AFC systems across different bands and uses, where these requirements align with international markets.

43. As discussed in response to question 9, ISED should mandate the use of open standards for AFC database interface and synchronization.

44. The alignment of AFC standards will encourage providers of database systems in one band to extend these services to other bands. CanWISP members are anxious to see widespread availability of affordable database options in Canada for both the 6 GHz band and the TVWS band; the absence of such a system in Canada is detrimental to wireless service providers across the country.

45. CanWISP thanks ISED for the opportunity to provide these comments.

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