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Innovation, Science, and Economic Development Canada
c/o Senior Director
Spectrum Planning and Engineering
Engineering, Planning and Standards Branch
235 Queen Street, 6th Floor
Ottawa, Ontario K1A 0H5
Canada

Re: *Canada Gazette*, Part I, November 25, 2017; 'Consultation on the Technical, Policy, and Licensing Framework for Wireless Microphones' (SMSE-019-17)

Dear Sir or Madam:

The Dynamic Spectrum Alliance (DSA) applauds Innovation, Science, and Economic Development (ISED) Canada's effort to enable greater spectrum utilization across several bands by initiating a 'Consultation on the Technical, Policy, and Licensing Framework for Wireless Microphones' (the Consultation).

The DSA is a global organization advocating for laws and regulations that will lead to more efficient and effective spectrum utilization. Our membership spans multinationals; small- and medium sized enterprises; and academic, research and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike. Our primary goals are to close the digital divide by reducing the cost of deploying last-mile wireless networks, enabling the Internet of Things, and alleviating the spectrum crunch.¹

The DSA fundamentally disagrees with ISED's proposal that the entire duplex gap be shared exclusively between voluntarily licensed eligible and licence-exempt wireless microphones. ISED's high-level policy objective is to 'harmonize spectrum use with international allocation and standards except where Canadian interests warrant a different determination'. Consistent with this spirit, the DSA proposes that ISED harmonize its regulatory framework for the 600 MHz duplex gap with that of the United States and authorize licence-exempt white space devices and licence-exempt wireless microphones to share the upper 6 MHz segment of the duplex gap.²

The Federal Communications Commission's (FCC or Commission) technical rules authorize white space devices to operate at up to 40 milliwatts in the upper 6 MHz of the duplex gap.³ The Commission's technical rules, developed through a robust public record, ensure that the 600 MHz mobile service uplink and downlink bands, operating at frequencies above and below the duplex gap respectively, will be protected from receiving harmful interference from white space devices operating at these low power levels. Although sharing of the duplex gap by two different sets of licence-exempt users is not an allocation, per se, there are no Canadian interests present that would warrant ISED to arrive at a different determination.

¹ For more on the DSA, please visit www.dynamicspectrumalliance.org

² See United States Code of Federal Regulations, Title 47, Part 15.707(a)(4)

³ See United States Code of Federal Regulations, Title 47, Part 15.709(a)(4)

The DSA's response to the consultation questions are provided below.

Q1. ISED is seeking comments on its proposal to allow wireless microphones to use the 3 MHz guard band (614-617 MHz) and the 11 MHz duplex gap (652-663 MHz) subject to appropriate conditions to mitigate adjacent channel interference to mobile services.

- A. Should technical rules be harmonized with those of the FCC to allow low power wireless microphones in the guard band (614-617 MHz) and duplex gap (653-663 MHz) with a maximum transmit e.i.r.p. of 20 mW?

The DSA believes that ISED should authorize white space device and wireless microphone operations, each on a licence-exempt basis, to share the upper 6 MHz (657-663 MHz) segment of the duplex gap. Further, ISED should adopt technical rules for licence-exempt wireless microphone operations in the upper 6 MHz segment of the duplex gap that are harmonized with those of the FCC with the one exception we provide below.

ISED should adopt rules to limit the maximum radiated power of licence-exempt wireless microphones to 20 mW e.i.r.p.⁴ within the upper 6 MHz segment of the duplex gap. The DSA supports ISED adopting technical requirements for frequency selection offset, maximum operating bandwidth, frequency tolerance of the carrier signal, and emissions outside the channel that are harmonized with the FCC's rules.⁵

Unlike in the United States, the DSA does not see a need for licence-exempt wireless microphones seeking to operate on the 657-663 MHz segment of the duplex gap to contact a white spaces database prior to operation to determine that their intended operating frequencies are available for licence-exempt wireless microphone operation at the location where they will be used. Under the Commission's rules, licence-exempt wireless microphone users must register with, and check, a white space database to determine available channels prior to beginning operation at a given location. A user must re-check the database for available channels if it moves to another location.⁶ The Commission's rule implements Section 6407 of the 'Spectrum Act of 2012'.⁷

Q2. ISED is seeking comments on its proposal to introduce the use of wireless microphones, on a secondary basis, into the frequency bands 941.5-952 MHz, 953-960 MHz, 6930-6955 MHz and 7100-7125 MHz with appropriate conditions to prevent interference to fixed services.

The Consultation document states that: 'The frequency bands 6930-6955 MHz and 7100-7125 MHz are currently used by one-way line-of-sight radio systems in the fixed service to provide television auxiliary services...These frequency bands are lightly used with approximately 64 licences in the lower portion and 157 licences in the upper portion.'⁸

In 2017, the FCC initiated a Notice of Inquiry on 'Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz'.⁹ The Commission asked questions regarding the potential for the 5925-7125 MHz band to support

⁴ See United States Code of Federal Regulations Title 47, Section Part 15.236(d)(2).

⁵ See United States Code of Federal Regulations Title 47, Section Part 15.236(g).

⁶ See United States Code of Federal Regulations Title 47, Section Part 15.236(c)(6).

⁷ See United States Public Law 112-96 enacted on February 22, 2012.

⁸ See the Consultation at paragraph 44.

⁹ See *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, GN Docket No. 17-183, Adopted and released August 3, 2017 ("NOI").

licence-exempt RLAN use. The DSA provided comments.¹⁰ Recently, RKF Engineering published a study on ‘Frequency Sharing for Radio Local Area Networks in the 6 GHz Band’, which concludes that a national deployment of RLAN devices in the United States in the 6 GHz band, using established RLAN mitigation techniques and regulatory constraints similar to those applied in the neighboring 5 GHz bands (specifically the 5150-5250 MHz and 5725-5850 MHz bands), will be complementary in spectrum utilization to the primary services (specifically Fixed Satellite Service, Fixed Service, and Mobile Service (Broadcast Auxiliary Service)), and will not cause harmful interference.¹¹

As ISED weighs the relative long-term costs and benefits of authorizing wireless microphone use in the 6930-6955 MHz and 7100-7125 MHz bands, consistent with its broad policy objective to harmonize spectrum use and maximizing economic benefits to Canadians, it should consider the Commission’s Mid-Band NOI and parallel activity in Europe regarding possible licence-exempt RLAN authorization in the 5925-7125 MHz band.

Q3. ISED is seeking comments on its proposal to allow wireless microphones to access the broadcasting bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz), the duplex gap (652-663 MHz) and the guard band (614-617 MHz) on a licence-exempt basis, and the voluntary licensing of eligible users’ wireless microphones.

- A. ISED is seeking comments on the eligibility criteria to determine who should be permitted to voluntarily licence their systems (see paragraph 62).

The DSA agrees that ISED’s eligibility criteria should limit voluntary licences to professional users only. In the United States, the definition of ‘a significant number’ has proved to be a challenge. The DSA believes the FCC got it right by setting that number at 50 licence-exempt wireless microphones. The DSA recommends ISED define ‘a significant number’ as 50 licence-exempt wireless microphones.

- B. Should ISED consider a licence-exempt approach for wireless microphones within the broadcasting or 600 MHz bands (614-617 MHz and 652-663 MHz)?

The DSA urges ISED to harmonize its channel plan for the 600 MHz duplex gap in Canada with that put into force by the FCC for the 600 MHz duplex gap in the United States. Under the FCC 600 MHz duplex gap band plan, 652-653 MHz serves as a guard band between the LTE downlink and licensed wireless microphones, 653-657 MHz is authorized for licensed wireless microphones, and 657-663 MHz is shared by licence-exempt wireless microphones and white spaces devices. The DSA fundamentally disagrees with ISED’s proposal that the entire duplex gap be shared exclusively between voluntarily licensed eligible and licence-exempt wireless microphones.

Q4. ISED is seeking comments on its proposal to license the operations of wireless microphones on a secondary basis in the frequency bands 941.5-952 MHz and 953-960 MHz, 6930-6955 MHz and 7100-7125 MHz, based on its eligibility criteria.

- A. ISED is also seeking comments on the eligibility criteria (see paragraph 62).

The DSA believes that ISED should not license the operation of wireless microphones on a secondary basis in the frequency bands 6930-6955 MHz and 7100-7125 MHz. The DSA’s recommendation is that no wireless microphones operate in these frequency bands. In the event ISED decides to move forward with allowing

¹⁰ https://ecfsapi.fcc.gov/file/1002973230881/DSA%20Comments%20Mid-band%20NOI_10022017.pdf.

¹¹ <https://s3.amazonaws.com/rkfengineering-web/6USC+Report+Release+-+24Jan2018.pdf> Visited January 28, 2018.

wireless microphones to use these frequency bands, it should authorize licence-exempt use of wireless microphones on a secondary basis in these frequency bands. Based on the entities listed in paragraph 62, the DSA believes that the number of 'professional' microphones across Canada will be limited in number. In the future, if ISED authorizes licence-exempt RLAN operations in the 5925-7125 MHz frequency band, the mitigation required to protect a very small number of licensed wireless microphone users would represent an undue burden and likely significantly increase the cost of RLAN operations that would be borne by the considerably larger number of Canadians utilizing the additional broadband capacity.

Respectfully submitted,

Kalpak Gude
President
Dynamic Spectrum Alliance