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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

Dear Sir or Madam:

The Dynamic Spectrum Alliance (DSA) submits the following Reply Comments in response to the Comments filed to the Industry, Science, and Economic Development (ISED) Canada's "Consultation on the Technical, Policy, and Licensing Framework for Wireless Microphones."[1]

Concurrent with the Consultation, ISED asked for comments on its "Consultation on the Spectrum Outlook 2018 to 2022." Under the Section entitled, "A principled approach to releasing spectrum," ISED states:

> "As the spectrum resource is in limited supply, ISED seeks to maximize the use of the spectrum. As demand for spectrum increases, traditional services are competing with new services to use the same spectrum. Today, ISED often chooses to move existing services to another band to free up spectrum for new uses. In the future, this approach will not always be possible given the extent to which spectrum is already being used. However, new technologies and techniques (e.g. cognitive radio, dynamic spectrum access, smart antennas, and radio resource management techniques) are being developed that will change the way spectrum is accessed through intelligent decision-making solutions and geographic/operational awareness of the radio environment. These technologies and techniques provide new opportunities for optimizing the use of spectrum and promise to make it increasingly feasible to share spectrum in real time between multiple different services. ISED will take into account new approaches and the impact of new technology when assessing the potential changes to spectrum allocations and when prioritizing spectrum releases."[2]

The DSA urges ISED to apply the principled approach to spectrum management described above to the Consultation and the 'Consultation on White Space Devices.'[3] DSA is focused on increasing dynamic access to

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

[2] 'Consultation on the Spectrum Outlook 2018 to 2022' (SMSE-006-17); Canada Gazette, Part I, October 6, 2017; at paragraph 20.

[3] 'Consultation on the Technical and Policy Framework for White Space Devices' (SMSE-018-17); Canada Gazette, Part I, November 25, 2017.

unused radio frequencies. Most of the comments submitted to the Consultation take a very traditional approach to spectrum management – clear the spectrum for exclusive use, even if the exclusive use is for another licence-exempt service.

The DSA recognizes the important role licenced and licence-exempt wireless microphones have in the production of television and radio broadcasts, and motion pictures; at entertainment venues, such as live performance and sporting events; and in education, to name a few. Having participated in several white spaces proceedings in the United States, we also appreciate the issues surrounding electronic news gathering.

The DSA agrees with several commenters that the upcoming 600 MHz auction will lead to a reduction in spectrum available for licensed and licence-exempt microphones. The 600 MHz auction will also lead to a reduction in spectrum available for licence-exempt white space devices. Where DSA fundamentally disagrees with ISED's proposal and several of the comments filed, however, is that we believe that spectrum in the upper six megahertz of duplex gap can be shared by low power licence-exempt wireless microphones and licence-exempt white space devices. No technical reasons have been identified in the comments for why the upper six megahertz of the duplex gap cannot be shared.

In less densely populated parts of Canada, even after the 600 MHz auction, there will remain ample spectrum for licensed and license-exempt wireless microphones. The challenge will be in the country's metropolitan areas, where additional spectrum is needed both for white space devices and wireless microphones.

In this Consultation, ISED is seeking comment on several additional spectrum bands it has identified for potential wireless microphone use. Additionally, older analog wireless microphones are considerably more spectrally inefficient than the newer digital wireless microphones. Over time, as these older microphones are replaced, wireless microphone users at a given location will not require as much spectrum for the same number of microphones.

For the white space devices ecosystem to develop and provide the Internet connectivity solutions to narrow the digital divide in Canada, it must have access to a minimum amount of spectrum everywhere. DSA thus envisions that the channel in the duplex gap would be available to white space devices throughout Canada. Without the channel available in the duplex gap, it will be more challenging for the white space ecosystem to take root and flourish in the country.

DSA's Reply Comments to Questions 1 and 3 are provided below.

Question 1

CBC Radio Canada,[4] SaskTel,[5] and the Association of Broadcasters (CAB)[6] assert that ISED should restrict white space devices from operating in the duplex gap because the short time frames and varying locations of electronic news gathering means that there would not typically be time to resister a location in the white spaces database. ISED should reject this argument. None of the commenters in support of ISED authorizing white space

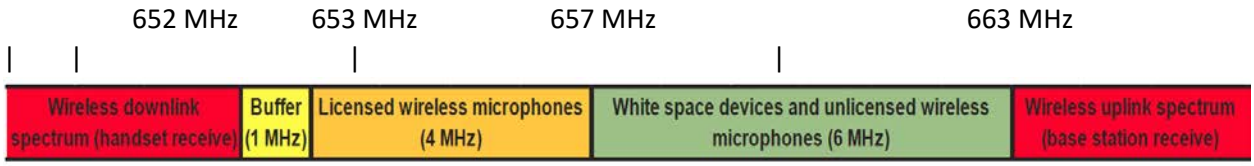
[4] *See* Comments of CBC Radio Canada.

[5] *See* Comments of SaskTel at paragraph 12, page 5.

[6] See Comments of Canadian Association of Broadcasters

device operations in the duplex gap is advocating for licensed wireless microphones operating in the duplex gap for electronic news gathering operations to register a location in the white spaces database.

In fact, in the United States, the Federal Communications Commission (Commission) designated the frequency range 653-657 MHz "for licensed wireless microphones users only, thus enabling them to access spectrum for quick-breaking events without having to reserve channels in the white space databases."[7] The Commission's band plan for the duplex gap is presented below:



ISED can harmonize its rules with those of the United States and not require licensed users of the four-megahertz segment of the duplex gap to rely on a database to determine frequency availability.

The arguments put forward by CBC Radio Canada, SaskTel, and CAB regarding licensed wireless microphones are irrelevant to whether ISED should allow licence-exempt white space devices and licence-exempt wireless microphones to share the upper six megahertz of the duplex gap.

In Question 3, several commenters agree that wireless microphones can share spectrum with white space devices on channels authorized for white space device use below 608 MHz. If wireless microphone manufacturers such as Sennheiser, Shure, and Lectrosonics believe that wireless microphones can share spectrum with white space devices in broadcast television bands, it means that the techniques and technology necessary for sharing is available. It also means that these same techniques and technology can enable white space devices to share the upper six megahertz of the duplex gap with wireless microphones. And as DSA explained in its comments, while the Commission's rules require licence-exempt wireless microphones to register in the white spaces database to meet a statutory requirement, no such requirement exists in Canada. Thus, in Canada, the DSA does not see a reason why any wireless microphones operating in the duplex gap need to register a location in the white spaces database. Finally, DSA opposes any voluntary licensing by wireless microphones users within the duplex gap.

The DSA agrees with Shure's recommendation "that Canadian frequency band plan regulations mirror the FCC band plan."[8]

Question 3

The DSA supports license-exempt wireless microphones to share frequencies below 608 MHz where license-exempt white space devices are authorized. Several commenters share this view. In line with the U.S. rules, the DSA understands why ISED will permit voluntary licensing of spectrum for large events and certain professional users. It is important that ISED ensure that when these venue operators and professional users register their reservation in the white spaces database it is only for the times and places when the spectrum is being used.

[7] See "In the Matter of Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37," United States Federal Communication Commission, 30 Rcd. at 9584, at paragraph 153.

[8] *See* Comments of Shure at paragraph 6, page 6.

Such action will prevent white space spectrum from being reserved indefinitely but left sitting fallow for most of the time. The current Commission rules permit venues routinely using more than 50 licence-exempt wireless microphones to temporarily license / reserve channels in the white space database. The DSA recommends that ISED's definition for professional users' eligibility also include a minimum number of licence-exempt wireless microphones in use. The DSA believes as a rule, ISED should require a professional user to operate a minimum of 50 licence-exempt wireless microphones to receive a voluntary license. The DSA is open, though, to ISED having a petition process in place to address requests for voluntary licensing for a lower number of microphones under extraordinary circumstances.

Respectfully Submitted,

Kalpak Gude
President