

BEFORE INDUSTRY CANADA

IN THE MATTER OF

**CANADA GAZETTE, PART 1, NOTICE NO. SMSE-018-17
CONSULTATION ON THE TECHNICAL AND POLICY FRAMEWORK FOR WHITE
SPACE DEVICES**

COMMENTS OF WI-FI ALLIANCE



February 15, 2018

1.0 INTRODUCTION AND BACKGROUND

1.1 On November 15, 2017, Innovation, Science and Economic Development Canada (“ISED” or the “Department”) issued Notice No. SMSE-018-17 seeking input on proposed changes to its rules governing TV White Space Devices (“WSDs”).^{1/} Wi-Fi Alliance®^{2/} applauds ISED’s continuing work to open TV band spectrum not used by TV broadcast stations (“White Spaces”) to use by licence-exempt devices and conform its regulatory approach to align with the United States and United Kingdom.

1.2 Wi-Fi Alliance is a global, non-profit industry association of over 800 leading companies from dozens of countries devoted to connecting everyone and everything everywhere. With technology development, market building, and regulatory programs, Wi-Fi Alliance has enabled widespread adoption of Wi-Fi® worldwide, certifying thousands of Wi-Fi products each year. The mission of Wi-Fi Alliance is to provide a highly effective collaboration forum for Wi-Fi matters, grow the Wi-Fi industry, lead industry growth with new technology specifications and programs, support industry-agreed standards, and deliver greater product connectivity through interoperability, testing, and certification. It is also deeply involved in regulatory efforts related to licence-exempt spectrum around the world.

^{1/} Notice No. SMSE-018-17, *Consultation on the Technical and Policy Framework for White Space Devices*, Canada Gazette, (November 15, 2017) (“*Consultation*”).

^{2/} Wi-Fi®, the Wi-Fi logo, the Wi-Fi CERTIFIED logo, Wi-Fi Protected Access® (WPA), WiGig®, the Wi-Fi Protected Setup logo, Wi-Fi Direct®, Wi-Fi Alliance®, WMM®, Miracast®, and Wi-Fi CERTIFIED Passpoint® , and Passpoint® are registered trademarks of Wi-Fi Alliance. Wi-Fi CERTIFIED™, Wi-Fi Protected Setup™, Wi-Fi Multimedia™, WPA2™, Wi-Fi CERTIFIED Miracast™, Wi-Fi ZONE™, the Wi-Fi ZONE logo, Wi-Fi Aware™, Wi-Fi CERTIFIED HaLow™, Wi-Fi HaLow™, Wi-Fi CERTIFIED WiGig™, Wi-Fi CERTIFIED Vantage™, Wi-Fi Vantage™, Wi-Fi CERTIFIED TimeSync™, Wi-Fi TimeSync™, Wi-Fi CERTIFIED Location™, Wi-Fi CERTIFIED Home Design™, Wi-Fi CERTIFIED Agile Multiband™, Wi-Fi CERTIFIED Optimized Connectivity™, and the Wi-Fi Alliance logo are trademarks of Wi-Fi Alliance.

1.3 As ISED has noted elsewhere, “demand for radio frequency spectrum continues to rise as a result of the growth in wireless broadband,”^{3/} with a “significant increase in use and innovation” in licence-exempt devices.^{4/} ISED similarly observed in its recent *Spectrum Outlook* that Wi-Fi is a critical tool for getting Canadians and their devices online,^{5/} both as stand-alone connections and through mobile network offloading – ISED estimates 63% of Canada’s mobile traffic will be offloaded onto Wi-Fi networks by 2021,^{6/} though others believe that number will be even higher -- up to 75%.^{7/} Wi-Fi Alliance has conducted its own assessment of industry growth, which resulted in its *Spectrum Needs Study*.^{8/} This study showed that, based on traffic predictions for a number of countries around the world, between 500 megahertz and 1.8 gigahertz of new spectrum would be needed for Wi-Fi operations in order to avoid a coming spectrum shortage.^{9/}

1.4 As more Internet of Things (“IoT”) devices become available and are deployed, this increase in mobile data traffic will accelerate.^{10/} As ISED accurately notes, White Space technology will help support the applications that will create this increased data traffic, specifically recognizing local area networks and IoT machine-to-machine communications.^{11/}

^{3/} Notice No. SLPB-006-17, *Consultation on the Spectrum Outlook 2018-2022*, *Canada Gazette*, (October 6, 2017) (“*Spectrum Outlook*”) at 22.

^{4/} *Id.* at 44.

^{5/} *Id.* at 45.

^{6/} *Id.* at 53.

^{7/} See, *Comments of Cisco on Consultation on the Technical and Policy Framework for Radio Local Area Network Devices Operating in the 5150-5250 MHz Band*, at 6, filed Mar. 29, 2017.

^{8/} Wi-Fi Alliance, *Spectrum Needs Study*, Final Report (Feb. 2017) available at: https://www.wi-fi.org/downloads-registered-guest/Wi-Fi%2BSpectrum%2BNeeds%2BStudy_0.pdf/33364.

^{9/} *Id.* at 1.

^{10/} *Spectrum Outlook* at 52.

^{11/} *Consultation* at 9.

Wi-Fi Alliance therefore supports ISED's proposals regarding the harmonization of its White Space rules with those of the U.S., both for channels 3 and 4 and for portable/personal devices in channels 14 to 20, which have the potential to create additional capacity to meet these demands. In contrast, ISED's proposals to prohibit WSDs in channel 37 and the duplex gap will unnecessarily limit access to spectrum by WSDs and Wi-Fi Alliance urges ISED to re-evaluate those proposals.

2.0 QUESTION 1: ISED is seeking comments on its proposal to harmonize with the U.S. framework regarding the operation of fixed white space devices in channels 3 and 4 (60-72 MHz).

2.1 Wi-Fi Alliance supports the proposal in the *Consultation* to allow operations in Channels 3 and 4. Opening these channels will provide an additional 12 megahertz of much needed, contiguous spectrum where these channels are available. As the *Consultation* notes, the threat of interference from devices operating on these channels is minimal, based on the size of antennas that will be required for their operation. As the *Consultation* further observes,^{12/} these operations are now permitted under the U.S. rules, despite previously being prohibited. In 2015, the U.S. Federal Communications Commission ("FCC") found that its original concern with fixed devices operating on channels 3 and 4 were no longer valid, as the number of TV interface devices and TV receivers with direct pickups on those channels had declined significantly since 2008.^{13/} With the decline in TV interface devices and TV receivers continuing since 2015, this concern is likely even less valid in Canada.^{14/} By harmonizing these rules with those already in

^{12/} *Id* at 19.

^{13/} *In the Matter of Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands et al.*, Report and Order, 30 FCC Rcd 9551 at 84-86 (2015) ("White Spaces Report and Order").

^{14/} As the *Consultation* notes, this is not an issue in the U.K. because these channels are not part of their TV band.

place in the United States, ISED will create greater economies of scale, and lead to more equipment available to Canadian consumers and businesses.

3.0 QUESTION 2: ISED is seeking comments on its proposal to harmonize with the U.S. framework regarding the operation of personal/portable white space devices in channels 14 to 20 (470-512 MHz).

3.1 Wi-Fi Alliance supports the proposal to allow personal/portable devices in channels 14 to 20, as the United States and the United Kingdom have already done. Access to these channels is important to ensure that there is sufficient spectrum for the White Spaces to thrive, especially because the overall amount of spectrum available for these operations will shrink with the coming 600 MHz spectrum auction.^{15/} That was the primary reason the FCC changed its rules for channels in the U.S.; its previous decision to prohibit WSD operations on these channels was premised on the assumption that sufficient spectrum was available elsewhere in the band, but that is no longer believed to be true.^{16/} The FCC also noted that White Space Databases (“WSDBs”) are more than capable of protecting other operators, including broadcasters and wireless microphones. Wi-Fi Alliance agrees with ISED that harmonization with the decision reached in the U.S. will benefit Canadian consumers, and that WSDBs, which control all White Space operations, will be able to protect over-the-air TV broadcasts from these mobile devices in the same way it protects them from fixed device operations.^{17/}

^{15/} See, Notice No. SLPM-005-17, *Consultation on a Technical, Policy and Licensing Framework for Spectrum in the 600 MHz Band*, Canada Gazette (Nov. 14, 2017).

^{16/} *White Spaces Report and Order* at 88.

^{17/} *Consultation* at 24.

4.0 Question 3: ISED is seeking comments regarding its proposal to limit the use of white space devices to spectrum below 608 MHz at this time

4.1 ISED should reconsider its proposal to prohibit WSDs in the duplex gap, and should instead allow 40 mW personal/portable devices to operate in at least the upper 6 megahertz of that spectrum (657-663 MHz). While White Space operations are still nascent, they are expected to grow dramatically, especially as the rules in the U.S. and Canada are finalized following the reorganization of the TV band. As the use of this spectrum by licence-exempt devices grows, congestion will inevitably occur, especially in larger cities where growing WSD operations may exhaust available spectrum (because of the existence of additional TV stations). ISED should therefore seek to make available the maximum amount of spectrum feasible.

4.2 The approach that Wi-Fi Alliance suggests would maximize spectrum availability and also harmonize Canadian rules for this channel with those of the U.S. and U.K., which are based on a determination that such low-power devices would not cause harmful interference to mobile operations in adjacent bands. In its 2015 revisions to its White Spaces rules, the FCC determined that this interference risk was low based on extensive technical analyses and comments submitted into its record. Even when such devices operate in close proximity, a worst case scenario, the low power levels and out-of-band emissions limits of WSDs prevent harmful interference from occurring.^{18/}

4.3 ISED's concerns about the changing landscape for the 600 MHz band should not prevent it from allowing WSDs to operate in the duplex gap. There is no reason to believe these changes contradict the technical analysis already performed by the FCC in the United States, where the 600 MHz band is also undergoing changes as part of the recent post-Incentive Auction

^{18/} *White Spaces Report and Order* at ¶ 102.

Repack – changes which were already being planned-for prior to the 2015 revision of the White Spaces rules allowing WSD operations in the duplex gap.^{19/}

5.0 QUESTION 4: ISED is seeking comments on its proposal to continue to preclude the use of channel 37 (608-614 MHz) by white space devices.

5.1 ISED should reconsider its proposal to prohibit WSD operations on Channel 37, in particular low power (40 mW) personal/portable device operations. As noted above, the crowding and shortages that are likely to occur in the White Spaces, particularly in urban areas, should compel ISED to make as much spectrum available to meet these demands. The U.S. allows WSDs to use Channel 37, making the ISED proposal a notable deviation from its general practice of maximizing harmonization of its White Space rules with those in the U.S. In its 2015 revision to its White Spaces rules, the FCC found that existing WSD and WSDB procedures were sufficient to protect wireless medical telemetry systems (“WMTS”) operations in that spectrum and that a complete prohibition on the channel’s use was unnecessary. ISED notes the differences in the US and Canadian rules governing operations in Channel 37 – that WMTS, are not required to register with ISED.^{20/} But that difference should not prevent sharing. There is no need for WMTS to register with ISED in order to receive protection; the fact that this information is readily available in the U.S. makes sharing easier, but its absence can be addressed. In particular, WMTS operators can coordinate directly with the WSDB operators to ensure that their operations are protected, as do many other incumbent operators.

^{19/} See, e.g., *In the Matter of Expanding the Economic and Innovation Opportunities through Incentive Auctions*, Report and Order, 29 FCC Rcd. 6567 (2014).

^{20/} *Consultation* at 35.

6.0 CONCLUSION

Wi-Fi Alliance applauds the Department's forward-thinking approach to allowing licence-exempt operations in the White Spaces. Based on the ever-growing importance of products that use licence-exempt spectrum, including Wi-Fi networks, to Canadian businesses and consumers, this is critical to avoiding a spectrum crunch that undermines the potential of these devices. Wi-Fi Alliance encourages ISED to harmonize its rules to extent possible with the United States and United Kingdom, and to maximize spectrum availability. Doing so will foster the development of the WSD ecosystem and allow Canadians to extract the maximum benefit from this valuable spectrum resource.