To: Martin Proulx
Director General
Engineering, Planning and Standards Branch
Innovation, Science, and Economic Development Canada
235 Queen Street
Ottawa, Ontario
Canada, K1A 0H5

Re: Comments of the Dynamic Spectrum Alliance on White Space Database Specifications, DBS-01, Issue 2 Draft 1 External, June 13, 2019

Date: August 23, 2019

COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE

The Dynamic Spectrum Alliance ("DSA")[1] submits these comments to the Department of Innovation, Science and Economic Development Canada ("ISED") regarding White Space Database Specifications DBS-01, Issue 2 that sets out the technical requirements for the designation of a database capable of identifying available channels for use by fixed and personal/portable White Space Devices ("WSDs") in portions of the UHF and VHF frequency bands established under the *Decision on the Technical and Policy Framework for White Space Devices*.[2]

[1] The Dynamic Spectrum Alliance (DSA) is a global, cross-industry, not-for-profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all. Membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world. A full list of DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members/.

[2] *See Decision on the Technical and Policy Framework for White Space Devices*, Spectrum Management and Telecommunications SMSE-003-19, Department of Innovation, Science and Economic Development Canada, § 4 (2019), https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11486.html.

A few of the proposed rule changes for the white spaces database ("WSDB") correspond to changes in RSS-222-2 to address a more granular separation table, higher power operation in less congested areas, and the requirement that a fixed and Mode II personal/portable device reports its geo-location uncertainty along with its coordinates when querying the WSBD for a list of available channels.[3] DBS-01-2 proposes that, in addition to the list of available channels, the WSDB also provide the associated maximum power level on which a WSD may operate. However, it is not clear how this would be applied to bonded and aggregated channels. Finally, DBS-01-2 allows for an effective height above average terrain (EHAAT), directional height above average terrain (dirHAAT), and antenna height above ground level (and corresponding increases in separation distances). DSA strongly supports the increase in height limits and believes it will increase fixed WSD coverage in rural areas. DSA also supports the concept of dirHAAT for purposes of interference protection, as it is another step toward our ideal of basing protection on the WSD (directional) antenna characteristic.

For years, DSA has engaged with regulators on multiple continents considering WSD authorizations. Our observations led to the development of "Model Rules and Regulations for the Use of Television White Spaces."[4] DSA believes that DBS-01-2 retains certain rules, which if

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[3] *See White Space Devices (WSDs)*, Radio Standards Specification RSS-222, Issue 2, Department of Innovation, Science and Economic Development Canada (rel. June 13, 2019) ("RSS-222, Issue 2"), https://www.rabc-cccr.ca/open-consultations/rss-222-2-and-dbs-01-2/; *White Space Database Specifications*, Database Specification DBS-01, Issue 2, § 11.3.1.(i), Department of Innovation, Science and Economic Development Canada (rel. June 13, 2019) ("DBS-01, Issue 2"), https://www.rabc-cccr.ca/open-consultations/rss-222-2-and-dbs-01-2/.

[4] *See* Dynamic Spectrum Alliance, Model Rules and Regulations for the Use of Television White Spaces Version 2.0 (2017), http://dynamicspectrumalliance.org/wp-content/uploads/2018/01/Model-Rules-and-Regulations-for-the-use-of-TVWS.pdf.

left unchanged, as a practical matter will severely limit commercial interest and investment in both fixed and personal/portable devices.

First and foremost, ISED should consider harmonizing its rules for taboo channels with those of the United States. Prohibiting operations within the protected contour of over-the-air digital broadcasters on the second, third, and fourth adjacent channels for fixed WSDs at EIRP levels and height limits used for broadband access, combined with the fewer white space channels that will be available following repacking the remaining 400 and 500 MHz TV bands after the 600 MHz band is repurposed for mobile broadband, will severely limit areas where a Wireless Internet Service Providers ("WISPs") could even consider using fixed WSDs.

For example, if a TV broadcaster is operating on channel 18, under DBS-02, a fixed WSD could not operate above 40 mW EIRP on channels 14, 15, 16, 17, 19, 20, 21, and 22 within the broadcaster's protected contour. For television stations serving large metropolitan areas, the protected contours cover a radius of more than 100 km. If there is another digital TV ("DTV") broadcaster operating in the same market on channel 31, then channels 27, 28, 29, 30, 32, 33, 34 and 35 must also be free of WSDs operating at levels used for providing broadband access. A third DTV channel in the market, operating on channel 24, 25, or 26, would prevent fixed WSDs from operating in the entire band.

There are additional taboo channels for protecting analog television stations: the $\pm$ 2nd adjacent, third adjacent, fourth adjacent, seventh adjacent, and eighth adjacent channels as well as the upper fourteenth and fifteenth adjacent channels. The UHF band will consist of 23 channels -channels 14 through 36- after the repurposing of the 600 MHz bands is completed. An analog TV broadcaster operating on channel 22 prevents operation of a fixed WSD for

broadband access on fourteen of them: channels 14, 15, 18, 19, 20, 21, 23, 24, 25, 26, 29, 30, and 36. A second analog channel would effectively render the entire population under the coverage area off-limits for WSD broadband service. A DTV channel operating in channel 31 or above would have the same effect.

DSA expects fixed WSDs to be less commercially attractive in metropolitan areas, as residents there often have multiple options for broadband. On the other hand, northern regions within the coverage area of powerful DTV transmitters serving large metropolitan areas may benefit from the availability of fixed WSD broadband. Residents within the DTV protected contour and analog protected contour in smaller communities may also benefit from the availability of broadband delivered over fixed WSDs.

ISED's initial consultation on WSDs, *Consultation on a Policy and Technical Framework for the Use of Non-Broadcasting Applications in the Television Broadcasting Bands Below 698 MHz*, suggested a different approach, stating that:

> In keeping with Industry Canada's proposal to broadly harmonize with the United States, the co-channel and adjacent-channel separation distances relative to the TV protected contours specified in Table 6.2 would form a starting point for discussion of interference protection criteria for TV receivers. In this scenario, there would be no restriction on the operation of white space devices on the second and further adjacent channels to a TV broadcasting station.[5]

DSA is still unclear about why ISED came to a different conclusion than the United States regarding taboo channels. DSA therefore respectfully suggests that ISED consider

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[5] *Consultation on a Policy and Technical Framework for the Use of Non-Broadcasting Applications in the Television Broadcasting Bands Below 698 MHz*, Spectrum Management and Telecommunications SMSE-012-11, 13, Department of Innovation, Science and Economic Development Canada (2011), https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/consultation-smse012e.pdf/$FILE/consultation-smse012e.pdf.

adopting the United States WSD rules that only prohibit fixed WSDs from operating at more than 40 mW EIRP co-channel and on the first adjacent channel for both analog and digital television broadcasters.

DSA understands that ISED sought to be conservative when it established a new regime for spectrum sharing in the TV bands and adopted the initial TVWS regulatory framework. However, our observation is that an overly conservative number of taboo channels to protect analog and digital broadcast television service limits the commercial attractiveness of fixed WSD for WISPs that are considering options to provide wireless broadband to rural areas and is unnecessary to prevent harmful interference. Indeed, this is likely one key reason why there are not more commercial deployments of TVWS networks in Canada. We recognize all the effort that has been done in the revisions to RSS-222, Issue 1 and DBS-01, Issue 1, and we believe that they are beneficial to fixed WSDs intended for providing broadband in less densely populated parts of Canada. However, we believe this hard work will not be fully realized if the taboo channel issues are not addressed.

DSA stands ready to assist in any way we can.

Respectfully submitted,

Martha SUAREZ
President
Dynamic Spectrum Alliance

August 23, 2019