



NOMINET

Consultation on the Technical and Policy Framework for White Space Devices

Response to ISED's consultation - SMSE- 018-17

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About Nominet

Nominet is driven by a commitment to use technology to improve connectivity, security and inclusivity online. For 20 years, Nominet has run the .UK internet infrastructure, developing an expertise in the Domain Name System (DNS) that now underpins sophisticated network analytics used by governments and enterprises to mitigate cyber threats. The company provides registry services for top level domains and is exploring applications for a range of emerging technologies. A profit with a purpose company, Nominet supports initiatives that contribute to a vibrant digital future.

Through its work keeping the .UK namespace secure, Nominet's Emerging Technology team operates in a number of business areas, from providing dynamic spectrum management systems to deliver internet connectivity, to tools and analytics for Internet of Things (IoT) devices and autonomous driving, to selling complex data analytics software, including its ground-breaking network analytics tool for tackling cyber threats.

Nominet's involvement in TV White Space

Nominet has been actively involved in the development of TV White Space (TVWS) in the United Kingdom for a number of years as we believe it has the potential to provide and enhance access to the Internet at home and abroad, and to act as an enabler of the emerging IoT technologies. Over the past five years, Nominet's Emerging Technology team has built a TVWS database and qualified for participation in Ofcom¹'s pilot scheme as a White Spaces Database (WSDB) operator. The on-going collaboration between Nominet, Ofcom, and other stakeholders has helped shape and inform Ofcom's development of the UK's TVWS regulatory framework. Our WSDB has been used for academic research, for exhibits (e.g. at the Glasgow Science Centre during the Commonwealth Games), and in two live trial projects.

Following Ofcom's decision to release TV white spaces for use at the end of 2015, Nominet was the first company to successfully complete the qualification process for its WSDB. The WSDB has since been used for a mixture of academic and commercial activities. Most notably, Nominet is providing its expertise and access to the geo-location database to internet service providers (ISPs) enabling the first commercial broadband rollouts that use TVWS technology, on the Isle of Arran off the coast of Scotland, Llanarth in Wales, and recently Loch Ness in Scotland.

Nominet is now exporting its considerable TVWS expertise to regions outside of the UK in order to bring affordable internet access to remote and rural communities internationally, where the company is working with local and international partners to close the digital divide and enable the Internet of Things through innovative and future-proof technologies and policies. More recently, Nominet is undergoing the development of a WSDB for operation in the U.S.

Nominet is a member of the Dynamic Spectrum Alliance (DSA) and an active member of the DSA Regulatory Affairs Committee.

¹ The UK's communications regulator.

These diverse research projects have provided Nominet with significant practical experience of working with all the components of the TVWS framework and we expect these will be the basis of the frameworks for spectrum sharing in other bands.

Nominet's position about spectrum policy

Nominet believes that the adoption of dynamic spectrum sharing techniques is essential to enable lower barriers to access within the telecom market, close the digital divide, and avoid the impending wireless spectrum crunch, caused by the rapid growth of smartphones usage and IoT devices. We believe that dynamic spectrum management technologies are the leading method for fulfilling the aspiration of national spectrum regulators to see spectrum used in the most economically efficient manner. The existing static models used for allocating spectrum are inherently inefficient and are ill-suited when it comes to handling the continued rapid growth of wireless data traffic. The use of dynamic spectrum management for TVWS has ably demonstrated that it can be successfully implemented, and it is an important first step for using the approach more widely in other spectrum bands.

Response to the consultation

We express our appreciation for the opportunity to respond to this consultation, and we applaud the ISED's decision to review the regulatory framework in view of the domestic and international advancements in spectrum usage, with the long-term aim of increasing the effectiveness of spectrum utilization within Canada.

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).

We agree with ISED's proposal to allow operation of fixed white space devices in channels 3 and 4. We also note that the same considerations that the FCC made about personal/portable devices (and reported by ISED in Section 6.2 paragraph 23) are true for these channels too. In fact, a strength of the dynamic spectrum geo-location database approach is its ability to protect incumbents from both fixed and personal/portable devices. We therefore urge ISED to allow the use of channel 3 and 4 to all white space devices.

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).

We completely agree with the rationale advanced by ISED and the proposal.

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.

The opening of the 600 MHz band is a great opportunity for mobile operators to provide even better services. Realistically it will take several years for the repurposed 600 MHz band to be auctioned and for services to be rolled out across Canada.

It is worth noting that the fourth- highest bidder during the FCC's incentive auction of TV broadcasters' unwanted licenses in the 600MHz has recently publicly changed strategy. There is a strong likelihood this will add delays in the exploitation of the 600MHz band. By putting in place a moratorium on this band, we believe that ISED would be prone to similar dynamics to those happening in the US.

This is why we believe that the restrictive approach proposed would prevent Canadian citizens from benefitting from the broad usage potential of TVWS.

FCC are making the 600Mhz band available to TVWS devices until services actually come online in a particular region and channel. We believe that this is viable mechanism to protect mobile services in the 600 MHz band, similar to the one used in the U.S., could easily be implemented in Canada too.

ISED may wish to consider adopting what would be a simplistic approach by following the mechanism used by FCC and limiting it to the 617-698 MHz band, thus limiting the moratorium to the guard band.

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.

From a TVWS database provider point of view, including channel 37 would not pose significant problems. However, we agree with ISED that requiring a registration to wireless medical telemetry systems (WMTS) might outweigh the benefits of opening another channel for TVWS operation.

Conclusions

We would welcome the opportunity to contribute to the revision of the technical and operational requirements for white space systems within Canada. From a general perspective, we believe that the current rules constrain the channel availability for TVWS in many areas close to the border with the U.S., as well as the power limits in sparsely populated areas. The model rules developed by DSA represent, in our opinion, the best set among those developed in all countries which have regulated TVWS. Furthermore, the DSA rules allow optimal protection of incumbent users, high efficiency of spectrum utilization, and flexibility within the same regulatory domain to adapt the rules according to the characteristics of each geographic region.

Annex

Table 1: Current permissible channels by type of WSD.

Frequency bands (MHz)	TV channels	Personal/portable WSD	Fixed WSD
54-60	2	Not permitted	Permitted
60-72	3-4	Not permitted	Not permitted
76-88	5-6	Not permitted	Permitted
174-216	7-13	Not permitted	Permitted
470-512	14-20	Not permitted	Permitted
512-608	21-36	Permitted	Permitted
608-614	37	Not permitted	Not permitted
614-698	38-51	Permitted	Permitted

Table 2: Proposed new permissible channels by type of WSD.

Frequency bands (MHz)	TV channels	Personal/portable WSD	Fixed WSD
54-60	2	Not permitted	Permitted
60-72	3-4	Not permitted	Permitted (Q1)
76-88	5-6	Not permitted	Permitted
174-216	7-13	Not permitted	Permitted
470-512	14-20	Permitted (Q2)	Permitted
512-608	21-36	Permitted	Permitted
608-614	37	Not permitted (Q4)	Not permitted (Q4)
614-698	38-51	Not permitted (Q3)	Not permitted (Q3)