DSA Response:
Ofcom Consultation on Manually Configurable White Space Devices

About the Dynamic Spectrum Alliance

The Dynamic Spectrum Alliance (DSA) is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike.[1] Many DSA members, including 6Harmonics, Adaptrum, the Centre for White Space Communications at the University of Strathclyde, Carlson Wireless, Google, Interdigital, Japan's National Institute of Information and Communications Technology, Mediatek, Microsoft, and Spectrum Bridge, participated in Ofcom's pilot testing of its television white space framework.

General Response

The DSA appreciates Ofcom's leadership in developing rules for license-exempt access to vacant television channels, also known as white space. Demand for wireless services continues to skyrocket, and enabling shared access to spectrum will be increasingly important in meeting growing demand. We also recognize that devices that seek to use white space must provide accurate information regarding their location in order to accurately determine spectrum availability and protect incumbent users from harmful interference. Because many of today's white space devices do not rely on automated geolocation technologies,[2] we support Ofcom's proposal to allow manually configured white space devices to operate in vacant channels in the television broadcast bands. This approach will allow users to realize the benefits of deploying devices and Ofcom to improve spectrum utilization *today*. As geolocation capability improves, Ofcom may consider refining and updating its rules for manually configured devices.

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[1] A full list of members is available at www.dynamicspectrumalliance.org/members.html.

[2] Ofcom, *Manually Configurable White Space Devices: Consultation on the Licensing of Manually Configurable White Space Devices Operating in the UHF TV Band*, Feb. 27, 2015 (Consultation), at 1 (noting that "none of the devices tested during [Ofcom's] pilot were able to demonstrate that they could determine their location automatically").

Specific Responses

Question 1: Do you agree with our assessment of the likely costs and benefits of our proposal to license Manually Configured White Space Devices [MCWSDs] as a transitional arrangement? Please provide any available evidence to support your response.

Yes. As noted above, many white space devices in the market today do not accommodate automated geolocation technology. As a result, in order to make use of vacant spectrum lying fallow today, Ofcom should enable deployment of manually configurable devices. The potential benefits -- improving spectrum utilization, enabling innovation through light licensing, and improving broadband access throughout the United Kingdom -- far outweigh the administrative costs of establishing a transitional framework for manually configured devices. In addition, the U.S. experience -- which allows manual entry of geolocation data for fixed devices[3] -- shows that allowing such devices does not increase the risk of harmful interference to incumbent operations.[4] Indeed, many DSA members participating in network deployments in the United States have relied on professional installation, rather than automatic geolocation capability, to establish positional information.

Question 2: If you agree that Ofcom should allow MCWSDs to operate in the UHF TV band within the TVWS framework, how long do you believe that the licensing regime would need to be in place?

Geolocation techniques continue to improve, but it is not clear when white space devices that include automated geolocation capability will be widely commercially available. DSA agrees that it is appropriate to review the licensing regime in three years. At that time, Ofcom will have gained experience with the licensing approach and will be able to assess any advances in geolocation technologies.[5]

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[3] 47 C.F.R. § 15.711(b)(1).

[4] *See* Industry Canada, White Space Devices (WSDs), RSS-222 Issue 1, at 14 (2015), *available at* https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/RSS-222-Issue1.pdf/$file/RSS-222-Issue1.pdf (allowing manual entry of the location of fixed devices); IDA Singapore, Regulatory Framework for TV White Space Operatiosn in the VHF/UHF Bands at 20, June 16, 2014, *available at* http://www.ida.gov.sg/~/media/Files/PCDG/Consultations/20130617_whitespace/ExplanatoryMemo.pdf (same).

[5] Consultation at 1.

Question 3: If you agree that Ofcom should allow MCWSDs to operate in the UHF TV band within the TVWS framework, when do you believe it would be appropriate to conduct a review to assess whether there is an ongoing need to license MCWSDs?

As noted above, DSA agrees with Ofcom that it would be appropriate to review the licensing scheme in three years.[6]

Question 4: Do you agree with the proposed terms of the draft licence as set out in Annex 5 and as discussed below?

DSA responds to several of the specific questions on license terms and conditions below. Beyond these comments, DSA has no additional views on the terms of the draft license.

Question 5: Do you think it would be beneficial for the licensing regime for MCWSDs to cover both masters and slaves?

DSA agrees that both masters and slaves should be registrable as licensed devices. However, both fixed and mobile slave devices that do not possess geolocation technology should be permitted to rely on manually configured masters without being required to obtain a separate license for operation. In such cases, the slave devices would rely on the generic operational parameters established by Ofcom for slaves served by their serving masters.[7]

Question 6: Do you agree that our licensing regime should only apply to type A devices?

DSA agrees that the licensing regime should apply only to type A or fixed devices.

Question 7: Do you agree with our approach to allow a number of MCWSDs under the control of a single licensee to be subject to a single licence?

Yes. DSA agrees that a single license should cover the operation of multiple devices under the control of the licensee, and that licenses should allow operation throughout the United Kingdom.[8] Requiring a separate license for every device would unnecessarily increase administrative complexity for both network operators and Ofcom for no appreciable benefit.

Question 8: Do you agree that the proposal for specific licence terms will mitigate the risks posed by the use of MCWSDs?

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[6] *Id.*
[7] *See* Consultation at 17-18.
[8] *See* Consultation at 40.

In general, DSA agrees that developing a quality assurance program will ensure that manually configured devices are installed correctly.

Question 9: Do you consider the proposed licence terms are appropriate and proportionate?

Beyond the answers set forth above and below, DSA has no further comments on the license terms.

Question 10: Do you have any comments on our proposal to require applicants for licences to deploy MCWSDs to supply details of their QA process on application?

DSA agrees that Ofcom should work with industry to establish processes that ensure that the geolocation information provided for manually configurable devices is accurate. Ofcom has reasonably proposed that network operators may be asked to provide information regarding the following: the methods and equipment used by an installer to determine a MCWSD's location; the methods used to ensure *correct* installation, the processes established to ensure that location information remains up-to-date, and record-keeping practices associated with maintaining accurate device locations.

Question 11: Do you agree with the proposed technical conditions of the draft licence?

In general, DSA members support the proposed technical conditions of the draft license. Most importantly, DSA agrees with Ofcom's proposal to require manually configured devices to operate under the same technical conditions as those set forth for license-exempt devices. Manually configured devices accordingly should have access to the same spectrum opportunities as license-exempt devices.

However, as currently proposed, Ofcom's suggestion to allow licensees to provide device parameters to databases directly -- rather than entering those parameters on the device -- creates some uncertainty regarding the obligations of database providers. Ofcom should not offer this option unless it clarifies the following issues. First, Ofcom should make clear that databases need not implement a special user interface for network operators to provide device information directly to the database. Database operators may opt to do so as a value-added service, but it should not be considered a core functionality of database operation. Second, Ofcom should clarify that the responsibility to provide accurate geolocation data lies with the license-holder, not with the database operator. In most cases, database operators will have little to no ability to verify the accuracy of the geolocation information provided by an end user, no matter how it is provided. This approach tracks the one adopted in the United States: the

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U.S. rules provide that "the party who registers the fixed TVBD . . . will be responsible for assuring the accuracy of the entered coordinates."[9]

Question 12: Do you have any comments on the proposed duration for this licence?

DSA has no comment on this question.

Question 13: Do you have any comments on our proposed licence fee of £1,500?

Regardless of whether one license can cover multiple devices or each device has a separate license, any license fees imposed by Ofcom should be low enough to permit small deployments while still encouraging the introduction of unlicensed devices.   £1500 may be too high to strike the right balance between those considerations. Ofcom should consider lowering the fee for smaller deployments or establishing a tiered system. Such a tiered system could operate as follows: License-holders deploying less than 10 devices would pay substantially less than £1500. License-holders deploying between 10 and 100 devices would pay more than the license holders with the smallest deployments. Large license holders -- those with more than 100 devices under their control -- would pay £1500. The numbers used here are merely illustrative but give a sense of how Ofcom could ease the burden on smaller providers.

Question 14: Do you have any comments on our proposed five year minimum notice period for revocation for spectrum management reasons?

DSA has no comment on this question.

Question 15: Do you believe there is likely to be an ongoing need for white space devices that allow some level of manual configuration? Please give reasons for your answer.

There may be some situations in which manual entry may be more appropriate even when automatic configuration is available. For example, operators of small, fixed deployments, including municipal Wi-Fi network operators or broadband network operators in rural areas, may continue to prefer manual entry if an automated solution requires costly hardware, antennas, or cabling.   Nevertheless, DSA supports revisiting this question in three years. At that point, both stakeholder input and Ofcom's decision will benefit from three years of experience with manually configured devices.

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[9] 47 C.F.R. § 15.711(b)(1).

Question 16: Do you believe there is merit in exploring allowing enhanced operation through a licensing regime in the future and if so what additional capabilities should be allowed?

We support Ofcom establishing an optional enhanced mode wherein a device would provide additional information to a database about its operation, and the database would recalculate channel availability as a result. Enabling such capability allows spectrum sharing to be tailored to real-world conditions, rather than assumptions about device performance, and provides an incentive to both database operators and device manufacturers to improve their products. Database providers should also be allowed offer other value-added services, such as indicating to a device which channels are best for operation in a given location--but these services, too, should be optional.

Respectfully submitted,

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Dynamic Spectrum Alliance