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COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE TO THE NATIONAL COMMUNICATIONS AUTHORITY'S INVITATION FOR COMMENTS ON TV WHITE SPACES SPECTRUM USAGE REGULATORY FRAMEWORK

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To Whom It May Concern
National Communications Authority (NCA)
Accra, Ghana

Re: **Draft Regulatory Framework for Television White Space (TVWS) Spectrum Usage in Ghana**

On behalf of the Dynamic Spectrum Alliance (DSA),[1] I welcome the National Communications Authority (NCA's) Public Consultation on its proposed TV White Spaces (TVWS) Spectrum Usage Draft Regulatory Framework for the Republic of Ghana (Draft Framework). I am also writing to thank you for allowing DSA's comments to be placed in the record on this Draft Regulatory Framework. In light of the USA's Federal Communications Commission (FCC), Industry Canada's, UK Ofcom's and Singapore's IDA decisions in the last 12 to 18 months to implement TV white space regulations,[2] NCA's consideration of this issue is particularly forward-looking and timely. The DSA maintains a map of worldwide commercial deployments, pilots and trials at its website[3].

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.[4] 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 have participated in TVWS pilot testing across the globe.

The DSA is particularly pleased that these Draft Regulations come only two years after the DSA's first ever Global Summit in Africa which was held in Accra, Ghana in May 2014[5].

[1] The Dynamic Spectrum Alliance's over forty members span multinational companies, small- and medium-sized enterprises, academia, 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. A full list of members is available at www.dynamicspectrumalliance.org/members.html.

[2] *See* http://news.gc.ca/web/article-en.do?nid=928659 (publication of technical standards and operational requirements for TV white spaces in Canada); http://stakeholders.ofcom.org.uk/consultations/white-space-coexistence/statement (release of decision implementing TV white space regulations in the United Kingdom).

[3] http://dynamicspectrumalliance.org/pilots/

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

[5] http://dynamicspectrumalliance.org/summit2014.html

The Dynamic Spectrum Alliance (DSA) is pleased to provide these comments to the NCA.

General Response

The DSA welcomes the NCA's adoption of an interim framework for TVWS in Ghana. This follows the very successful TVWS trials in Ghana (some involving DSA members or former members): Spectra Wireless & 6Harmonics (Meltwater and Koforidua pilots) and the Kofi Annan AITI trials.

These successful trials resulted in both Spectra Wireless and Microsoft 4Afrika launching a TVWS-based broadband commercial service in Ghana[6], a first in Africa, in January 2015. This service allows university students to buy fast, affordable Internet bundles and receive low-interest financing when purchasing a new device. The DSA welcomed and applauded the Ghanaian regulator, NCA, for granting a commercial license which allowed use of TV frequencies on a secondary basis as long as TV is not interfered with. The DSA noted that this would drive up spectrum efficiency of TV bands in Ghana. By allowing access to TV white space spectrum, the NCA enables more efficient utilization of finite spectrum resources and support key policy priorities such as digital inclusion and economic development.

The DSA truly appreciates NCA'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.

The DSA also believes that the NCA's proposal in this consultation to promote the adoption of a new Regulatory Framework to enable widespread deployment of TVWS-based network platforms in Ghana is a *natural next step* to both the successful trials in Ghana and the first TVWS-based commercial broadband service in Africa. The goal of opening the market to TVWS technology is to facilitate faster and more cost-effective access to wireless broadband backhaul and local networks, particularly in underserved and high-cost areas. This draft Regulatory Framework for TVWS, when formally adopted, could serve as the foundation for widespread rollout of this technology in Ghana – and across other countries in Africa.

The NCA has become one of the most effective telecom regulatory agencies in the region. And the Ghana Investment Fund for Electronic Communications (GIFEC) has been one of the most active Universal Service Funds in Africa, with positive new strategies to support broadband growth in rural areas. The DSA believes that, with this framework and with the NCA and GIFEC working together, affordable and accessible broadband Internet in Ghana would be significantly advanced.

TV White Spaces (TVWS) broadband equipment have evolved much over the last two years since the DSA Global Summit in Accra, Ghana, in May 2014. Several DSA members and others including Carlson Wireless,

[6] http://www.biztechafrica.com/article/spectra-wireless-microsoft-4afrika-launch-first-co/9576/?section=internet#.VMZRcS6FfIl

Adaptrum, 6Harmonics, Aviacomm, Saankhya Labs, etc. have evolved their radios and chipsets for the TV frequencies to the point where they are delivering broadband at a cost-effective and timely manner in several countries already. These new TVWS radios and microwave wireless transmission equipment promises real potential affordable and accessible Internet to customers located in challenging areas who may lack access to traditional telecommunications infrastructure.

Specific Comments on Draft Regulations

1. The NCA Draft Rules are appropriate and consistent with enacted regulations in other countries. The DSA applauds this approach.

The Dynamic Spectrum Alliance (DSA) believes that the draft NCA TVWS regulations are appropriate and consistent with those adopted in other countries, such as the United States, the United Kingdom, Canada, and even Singapore. The license-exempt, managed access approach proposed in the Draft Regulations is also consistent with approaches taken in these other jurisdictions that have adopted rules for the use of TVWS. Canada, Singapore, the United Kingdom, and the United States have all adopted rules for the licence-exempt use of the broadcast bands, and all rely on databases to protect higher priority users from harmful interference.[7] This consistency with other foreign regulations is key to deployments in Ghana because it permits TVWS equipment manufacturers to avoid re-designing and producing equipment with significantly different technical requirements than other markets around the world, thereby making the production process more efficient and lowering costs of TVWS equipment for Ghana's service providers.

2. The proposed rules should allow license-exempt managed use of the VHF bands

NCA's Draft Regulations proposes to adopt rules for licence-exempt use of the frequencies between 470-528MHz (Band IV) and 528-694 MHz (Band V). In its final regulations, NCA should extend its framework to allow licence-exempt use of VHF spectrum as well. The same methods used to protect broadcasters in the UHF band can also protect VHF spectrum users. As a result, implementing this addition should be straightforward and could free up significant additional spectrum contiguous to the UHF band.

[7] *See Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186; *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket No. 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010); Industry Canada, *Framework for the Use of Certain Non-Broadcasting Applications in the Television Broadcasting Bands Below 698 MHz* (2012), *available at* http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10493.html; Press Release, Industry Canada, Enhancing Wi-Fi Services in Rural Communities (Feb. 15, 2015), *available at* http://news.gc.ca/web/article-en.do?nid=928659; Infocomm Development Authority of Singapore, *Regulatory Framework For TV White Space Operations In The VHF/UHF Bands* (2014), *available at http://www.ida.gov.sg/~/media/Files/PCDG/Consultations/20130617_whitespace/ExplanatoryMemo.pdf*; Ofcom, *Implementing TV White Spaces* (2015), *available at* http://stakeholders.ofcom.org.uk/binaries/consultations/white-space-coexistence/statement/tvws-statement.pdf.

3. NCA should move forward without delay

Finally, NCA should move forward expeditiously with enacting this draft framework. Trials and commercial launches in and out of Ghana[8] have demonstrated that use of TVWS can bring significant benefits to Ghanaian citizens without causing harmful interference to existing users. And there are no substantial impediments to moving forward. The International Telecommunication Union (ITU) has made clear that no further international action is required for individual regulators to move forward with TVWS regulations; rather, as explained by François Rancy, Director of the ITU's Radiocommunication Bureau,

> "The ITU World Radiocommunication Conference of 2012 concluded that the current international regulatory framework can accommodate software defined radio and cognitive radio systems, hence dynamic spectrum access, without being changed. The development of systems implementing this concept, such as TV white spaces, is therefore essentially in the hands of national regulators in each country."[9]

WRC 2015 did not change this position either. TVWS technology, moreover, can be utilized both during and after the digital switchover.[10] For all these reasons, NCA should act now to unlock the potential of these vacant frequencies. The DSA urges the NCA to conclude the process of adopting a permanent regulatory framework enabling operation of unlicensed wireless devices in TV white space in Ghana.

4. The NCA can also consult DSA Model TVWS rules and Regulations

The DSA has developed a set of TVWS model rules and regulations which covers model white space rules, as well as suggested technical rules and regulations for the use of television white spaces. They can be obtained from this page[11] of the DSA website under "model regulations".

On behalf of the Dynamic Spectrum Alliance, I am looking forward to joining you in Cape Town, South Africa from 9-11 May 2017 to showcase all of this progress at the DSA's upcoming annual Global Summit.

Respectfully submitted,

H. Sama Nwana
Executive Director
Dynamic Spectrum Alliance

[8] http://dynamicspectrumalliance.org/pilots/
[9] François Rancy, Director, ITU Radiocommunication Bureau, Remarks at ITU Radiocommunication Seminar for Arab Countries (Dec. 13, 2013).
[10] *See* Discussion Paper at 27 (raising this question).
[11] http://dynamicspectrumalliance.org/regulations/