

Dynamic Spectrum Alliance Limited
21 St Thomas Street
Bristol BS1 6JS
United Kingdom
<http://www.dynamicspectrumalliance.org>

3855 SW 153rd Drive
Beaverton, OR 97006
United States



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HON. GAMALIEL A. CORDOBA

Commissioner
National Telecommunications Commission
Agham Road, Quezon City
Philippines

Re: Allowing the Use of Unused TV Channels (TV White Space) on a Secondary and Non-Interfering Basis

Dear Commissioner Cordoba:

The Dynamic Spectrum Alliance (DSA), a global, cross-industry alliance of more than forty members,¹ appreciates the opportunity to comment on the National Telecommunications Commission's (NTC's) draft Memorandum Circular that would allow the use of unused TV channels (TV white spaces) on a secondary and non-interfering basis. The DSA's members support policies that enable dynamic access as a means of improving spectrum utilization and enabling innovation in and adoption of wireless technologies.

The DSA welcomes the NTC's adoption of an interim framework that enables the Information and Communications Technology Office of the Department of Science and Technology (DOST-ICTO) to use TV white spaces to serve public elementary schools, public high schools, public health centers, and government agencies and units in unserved or underserved areas. By allowing access to TV white space spectrum, the NTC will enable more efficient utilization of finite spectrum resources and support key policy priorities such as digital inclusion and economic development.

At the same time, the DSA urges the NTC to make two important changes to the draft Memorandum Circular. First, the NTC should permit deployments throughout the Philippines. Second, the NTC should allow TV white spaces technologies to be used without limitation to customer classes, applications, and services.

Finally, even as NTC is taking this important interim step, the Dynamic Spectrum Alliances also urges the NTC to move expeditiously to adopt a permanent regulatory framework enabling operation of unlicensed (license-exempt) wireless devices in the TV white spaces spectrum.

ROLE OF TELEVISION WHITE SPACES IN MEETING INCREASING DEMAND

Dynamic spectrum access allows access to frequencies at a certain time or in a certain geographic location, when spectrum is fallow or coexistence with other services can be managed. For example, where the frequencies have been allocated for certain uses but not assigned or licensed to specific users

¹ The Dynamic Spectrum Alliance membership spans 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.

such as broadcasters, secondary services may use the spectrum provided that they do not cause harmful interference to the primary user. The benefits of enabling dynamic spectrum access are clear: It allows use of otherwise fallow spectrum, increasing spectrum utilization while avoiding the challenges of clearing spectrum and relocating incumbents.

The particular benefits of enabling shared access to TV white spaces are significant. Radiowaves operating in different spectrum bands have varying atmospheric propagation characteristics, and spectrum below 1 GHz – such as in the broadcast television bands – can carry signals greater distances in free space without requiring equipment to repeat the original signal. Additionally, these lower-frequency radiowaves are able to penetrate many structural materials more effectively than those operating in higher frequency spectrum, thereby allowing for non-line of sight applications.

The technical feasibility of TV white space technology has been proven in numerous trials and pilot projects around the globe. The illustration below demonstrates that TV white space technology is already being widely deployed in projects occurring on five continents.



These deployments have taken place in locations as diverse as the United States, Namibia, the United Kingdom, South Africa, Singapore, Japan, South Korea, Ghana, the Philippines, Kenya, Tanzania, Uruguay, and Malawi. Each of these projects has occurred with the support and authorizations from the relevant regulatory authorities. In all cases, access to the Internet was expanded and/or improved without causing interference to incumbent users, including broadcasters. Indeed, across all of these projects there has not been a single report of harmful interference to incumbent users, including broadcasters. These deployments have provided Internet access to primary and secondary schools, university campuses, libraries, community centers, healthcare facilities, government offices, and small and medium sized businesses. The Philippines has been at the forefront using TV white space technology: pilot efforts have established communication channels in the wake of recent earthquakes

and typhoons.² More information on these projects is available on the Dynamic Spectrum Alliance’s website.³

These projects demonstrate that the availability of substantial new sub-1 GHz spectrum in TV white spaces may provide an affordable wireless solution to extending the reach of broadband networks to underserved and unserved communities, enable high speed indoor and outdoor wireless local area networks, and enable connectivity in the wake of natural disasters.

UNLICENSED ACCESS BENEFITS CONSUMERS

The benefits of unlicensed access to spectrum are well documented. Access to unlicensed spectrum allows licensed wireless and wireline broadband providers to increase the reach of their networks and improve network management in congested areas through techniques such as cellular offloading. “Globally, 45 percent of total mobile data traffic was offloaded onto the fixed network through Wi-Fi⁴ or femtocell in 2013. . . . Without offload, mobile data traffic would have grown 98 percent rather than 81 percent in 2013.”⁵ For smartphones and tablets in particular, Cisco has found that “daily data consumption over Wi-Fi is four times that of cellular.”⁶

This ability to offload data from cellular networks to Wi-Fi has saved mobile network operators billions of dollars in network deployment costs.⁷ The Wi-Fi experience also makes clear that greater availability of unlicensed spectrum increases both demand for and the utility of licensed spectrum. Wi-Fi availability has enabled consumers to use their phones and tablets more intensively to access online content and services. Use and development of these online services in turn drives demand for licensed and unlicensed network access, creating a virtuous cycle of investment in content, services, and applications.

An additional benefit of unlicensed access is that innovators creating new products and services operating in unlicensed spectrum bands do not need to seek permission from spectrum licensees such

² See <http://research.microsoft.com/en-us/projects/spectrum/impact-philippines.aspx>; See also Pia Ranada, *TV White Space connects Bohol fisherfolk to the Net*, Rappler, Apr. 7, 2014, available at <http://www.rappler.com/nation/54742-tv-white-space-fisherfolk-bohol>.

³ See <http://www.dynamicspectrumalliance.org/pilots.html>.

⁴ Trademark of the Wi-Fi Alliance.

⁵ Cisco Visual Networking Index (VNI) Global Mobile Data Traffic Forecast Update 2014.

⁶ Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update: Forecast and Methodology, 2013–2018, at 20.

⁷ Mark Cooper, *Efficiency Gains and Consumer Benefits of Unlicensed Access to the Public Airwaves*, at iii, 15-18 (Jan. 2012) (finding that offloading lowers operator costs by approximately \$26 billion per year); European Commission, *Study on the Importance of Wi-Fi & the Socioeconomic Benefits of Using Small Cell Infrastructures*, Aug. 1, 2013, available at <http://ec.europa.eu/digital-agenda/en/news/study-importance-wi-fi-socioeconomic-benefits-using-small-cell-infrastructures>, at 5 (finding that offloading reduced the network costs of European network operators by 35 billion euros in 2012, with savings expected to rise to as much as 200 billion euros in 2016).

as mobile broadband network operators. Because unlicensed devices are “free from the burden of normal delays associated with the licensing process,” manufacturers can design equipment to “fill a unique need [that can] be introduced into the market quickly.”⁸ Thousands of new unlicensed devices are certified each year. Wi-Fi devices are the best known, but Bluetooth,⁹ Zigbee,¹⁰ and RFID¹¹ devices have all also experienced rapid growth in the last several years. Machine-to-machine technologies, which often rely on unlicensed spectrum, represent a large and growing market as well.

Each regulator that has allowed access to the TV white spaces has done so on an unlicensed basis. The United States Federal Communications Commission has already implemented regulations allowing fixed and portable devices access to the UHF and VHF TV white spaces on an unlicensed basis. Likewise, the regulators in the United Kingdom, Singapore, and Canada have decided to allow unlicensed (or “license-exempt”) access to TV white spaces and are in the process of implementing their regulations. The next wave of regulators, many of which have permitted pilot projects on an interim basis, are now considering regulations allowing unlicensed access to the TV white spaces. As noted by the head of the ITU’s Radiocommunications Bureau, the development of dynamic spectrum access, such as in the TV white spaces, is “essentially in the hands of national regulators in each country.” To inform these discussions, the DSA has developed Model Regulations, which can be the basis for regulations adopted by the NTC and other regulators globally.¹²

THE NTC SHOULD ALLOW PILOT PROJECTS THROUGHOUT THE PHILLIPPINES

While the Dynamic Spectrum Alliance wholeheartedly supports the NTC’s proposal to allow DOST-ICTO to use TV white spaces to serve public elementary schools, public high schools, public health centers, and government agencies and units in unserved or underserved areas, we respectfully request that the NTC allow greater flexibility for pilot project deployments while it considers a permanent regulatory framework allowing wireless devices access to the TV white spaces on an unlicensed basis, subject to suitable technical rules.

First, TV white space deployments should not be limited to anywhere in the country “except the Metro Manila area.” The Memorandum Circular notes that the Section 4(b) of RA 7925 (the Public Telecommunications Policy Act) directs the government to “promote a fair, efficient and responsive market to stimulate the growth and development of the telecommunications facilities and services, with

⁸ Kenneth R. Carter, Ahmed Lahjouji, & Neal McNeil, United States Federal Communications Commission, *Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues*, OSP Working Paper Series at 5 (May 2003).

⁹ Bluetooth is a standard facilitating hands-free operation of music players, mobile phones, and other devices.

¹⁰ Zigbee powers technologies that benefit from ad hoc and mesh networking solutions, such as home automation.

¹¹ Radio Frequency Identification (RFID) technologies are used in a variety of industries to track inventory or other objects.

¹² See Model Regulations, available at <http://www.dynamicspectrumalliance.org/submissions.html>.

emphasis on the accessibility by persons to base services in unserved and underserved areas at affordable rates.” Although the Metropolitan Manila area is served by different forms of wireless and wireline Internet access, that availability is neither ubiquitous nor affordable for many citizens. TV white space technologies could help network operators deploy lower cost Internet access services in urban areas such as Manila. In addition, the range and propagation benefits of TV white spaces technologies could be of particular benefit in urban scenarios, such as providing better in building coverage and deploying various smart city applications (e.g., traffic monitoring, meter reading, and assessing water and air quality).

Moreover, Section 4(c) of RA 7925 (the Public Telecommunications Policy Act) directs the government to promote efficient and effective use of limited spectrum resources and to “avail of new and cost effective technologies in the use of the methods for its utilization”. There is no question that new dynamic spectrum access technologies, including but not limited to those utilizing the TV white spaces, will lead to more efficient and effective use of limited spectrum resources. Demand for devices leveraging different dynamic spectrum access technologies, such as TV white space equipment, will be greatest in urban markets, where population densities and therefore demand for limited spectrum resources are higher than in rural areas.

In addition, technical and regulatory experience supports deployment in major metropolitan areas. TV white space projects have been or are being deployed in major metropolitan areas, such as Accra, Cape Town, Dar es Salaam, Glasgow, and London, and Singapore. In each of these locations, TV white space transmissions have increased access to wireless services without causing interference to digital television (DTT) reception. In the case of Singapore, IDA has decided to allow access to over 180 MHz of TV white space spectrum. Moreover, none of the national rulemakings adopted or under consideration seek to exclude urban areas from the scope of TV white space rules. There is clear precedent to consider urban deployments of TV white space technology.

PILOT DEPLOYMENTS SHOULD NOT BE LIMITED SOLELY TO SCHOOLS, HEALTH CENTERS, AND GOVERNMENT AGENCIES

Second, use of TV white space equipment should not be limited to serving “public elementary schools, public high schools, public health centers, and government agencies and units in unserved or underserved areas.” As discussed above, Section 4(b) of the Public Telecommunications Policy Act directs the government to promote growth and deployment of telecommunications facilities without regard to whether those deployments are narrowly focused on public elementary schools, public high schools, public health centers, and government agencies and units in unserved or underserved areas.

CONCLUSION

The Dynamic Spectrum Alliance welcomes NTC’s proposal to allow access to the TV white spaces. Although the regime proposed by NTC takes a conservative approach, this interim scheme moves the process forward and will provide NTC with greater visibility into the operation of TV white spaces devices and further confirmation that such devices can operate effectively at scale without causing harmful interference to the incumbent primary service, broadcast. The DSA urges the NTC to follow the

lead of other regulators around the world, which are permitting limited commercial deployment of TVWS networks while a more permanent regulatory regime is developed. Based on experiences around the globe, it is clear that unlicensed devices can use the vacant television bands without causing harmful interference to incumbent users, and that such use provides valuable public interest benefits. Therefore, the Dynamic Spectrum Alliances also urges the NTC to move expeditiously to adopt a permanent regulatory framework enabling operation of unlicensed wireless devices in the TV white spaces.

Respectfully submitted,



H. Sama Nwana
Executive Director
Dynamic Spectrum Alliance