

March 12, 2020

The Executive Vice Chairman
Nigerian Communications Commission
Plot 423, Aguiyi Ironsi Street, Maitama District
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spectrum@ncc.gov.ng

Re: DSA Comments to the Nigerian Communications Commission (NCC) Public Consultation on the ‘Draft Guidelines on the use of Television White Space (TVWS) in Nigeria’

Dear Prof. Umar Danbatta:

The Dynamic Spectrum Alliance (DSA) respectfully submits the following comments in response to NCC’s consultation, “Draft Guidelines on the use of Television White Space (TVWS) in Nigeria.”

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. Our membership spans multinationals, small-and medium-sized enterprises, as well as academic, research and other organizations from around the world all working to create innovative solutions that will benefit consumers and businesses alike by making spectrum abundant through dynamic spectrum sharing¹.

The “Draft Guidelines on the use of Television White Space (TVWS) in Nigeria” published in December 2019 allow license-exempt white space devices to operate at locations where UHF band TV frequencies are not in use by licensed services, while protecting primary users from receiving harmful interferences. License-exempt white space devices will allow for the provision of affordable broadband and Internet access in unserved and underserved areas within Nigeria, and support various use cases, including broadband data, Internet of Things (IoT), Super Wi-Fi, Emergency communications and community networks.

The DSA welcomes the Commission’s efforts and congratulates the Commission for taking an important step forward on embracing dynamic spectrum sharing in the UHF band, which will significantly contribute to broadband development in rural Nigeria and help Nigeria to attain broadband penetration goals set forth in the new National Broadband Plan (NBP) 2020-2025. The DSA would like to also take this opportunity to

¹ A full list of DSA members is available on the DSA’s website at www.dynamicspectrumalliance.org/members

congratulate the Commission on its recent “Outstanding Regulator of the Year Award”. This regulatory initiative is a testament of the Commission’s commitment and continuing efforts in improving digital connectivity for all Nigerian citizens.

The UHF band has excellent propagation characteristics that make it particularly attractive for delivering communications services over long distances, coping with variations in terrain, as well as providing coverage into and within buildings. Type approved and authorized white space devices could be deployed by Wireless Internet Service Providers (WISPs) to provide Internet connectivity in rural and underserved areas, including for schools and libraries. DSA supports increasing shared spectrum use in TV white space for cost-effective broadband deployment and is convinced that Internet access will increase digital inclusion.

Moreover, we believe that spectrum sharing is fundamental to a modern spectrum policy framework and applaud NCC for its recognition of the importance of spectrum sharing. We encourage the Commission to move as expeditiously as possible to publish and enact the final Guidelines on the use of Television White Spaces in Nigeria. This will deliver more broadband connectivity in rural and underserved areas, as well as a wider range of investment, and new opportunities for innovation.

The DSA offers its strong compliment and support to the Commission on the draft guidelines published on December 31st, 2019. We believe that it is consistent with the global spectrum management trend in increased spectrum sharing, and comparable with the majority of the TVWS regulatory frameworks that have been adopted in other Sub-Saharan African countries such as South Africa, Ghana, Mozambique, and Uganda, as well as other parts of the world, such as the USA, the UK, Canada and Colombia. At the same time, the DSA has some reservations on Section 15, the Addendum to the Draft Guidelines that was published on March 4th, 2020, as the licensed approach may limit the number of new entrants as compared with the license-exempt approach specified in the original draft. In the below sections, we would like to offer DSA’s specific comments and recommendations:

1. Section 1 - Objectives - The DSA agrees with the Commission’s objectives stated in the guidelines and commend the collaborative efforts between NCC and the Nigerian Broadcast Commission (NBC) in jointly establishing this regulatory framework.
2. Section 2 - Permissible Frequencies of Operations – the DSA supports the Commission’s initial focus on the 470 to 694 MHz portion of the UHF band for license-exempt TVWS operations. The DSA recommends that the commission further considers the VHF band in future iterations of the guidelines, in order to take advantage of the available white space frequencies in the VHF band which could be extremely suitable for long-range, non-line-of-sight connectivity for narrowband IoT applications in the future, such as those for Agriculture IoT usage.
3. Section 3 - Authorization Framework – the DSA supports the license-exempt model for TVWS operations and the use of TVWS Database as described in section 9. The DSA also supports the temporary procedures to authorize TVWS operations prior to the certification of the TVWS database, as described in section 11. We believe that this will accelerate commercial deployments, increase rural broadband

penetration, and help to accumulate operating experiences and provide valuable field data as feedback to NCC and NBC for further improvement of the framework. We have reservations on the licensed TVWS operations proposed in the addendum (section 15) and we will provide specific comments in later part of this response.

4. Section 4 – TVWS Devices Conducted Power and Conducted Spectral Power Density Limits – the DSA supports the power limits set forth in the guideline as well as the flexibilities allowed in channel bonding and channel aggregation. For Transmit Power Control, the Commission should allow radio vendors the freedom of different implementations, so long as the radio complies with power limits set forth in section 4 (A).
5. Section 5 – TVWS Devices Antenna Requirements and Height Limits – the DSA suggests that Clause 5 (a) (i) be modified to “A fixed TVWS device shall have an *integral, dedicated or* external antenna.” This will make the language consistent with ETSI EN 301 598 Section 4.2.1.1, and will also allow Nigeria to take advantage of a broader TVWS device ecosystem, as there are TVWS radio vendors who has certified TVWS client devices that has an integral antenna, just like the ones on an iPhone. The DSA understands that the current guidelines consider fixed TVWS devices only, as the most desirable and immediate use case is rural broadband. We would strongly recommend that the Commission considers adding Personal/Portable devices, including IoT devices, in future iterations of the guidelines.
6. Section 6 – TVWS Devices – Radiated Power and In-Block EIRP Spectral Density Limits – the DSA supports the provision as the general guideline and encourages the Commission to experiment and evaluate future possibility of allowing higher power in certain areas where terrain challenges are high and probability of interferences are low, in order to boost TVWS radio coverage in extreme rural areas.
7. Section 7 – TVWS Devices – Out-of-block EIRP Spectrum Density Limits – the DSA supports the Commission’s adoption of ETSI 301 598 standard for defining the out-of-block EIRP Spectrum Density Limits and the ACLR on the first and second adjacent channel for the five Device Emission Classes. This would allow Nigeria to take advantage of a broader device ecosystem with differentiated price points.
8. Section 8 – Interference Avoidance Mechanisms: The DSA supports the requirement of geo-location capabilities as well as the allowance for professional installer option which could be a solution for improved accuracy on the z-axis where automated GPS location solutions may have limitations.
9. Section 9 - TV White Space Database – The DSA suggests that the Commission specify a terrain-based propagation model for use by the database calculation engine.
10. Section 10 - TVWS Database Administrator – the DSA supports the model of one or more designated entities as TVWS database administrator. We believe it is best left to the market to determine the optimal business model and pricing structure for the database operation, while the regulator retains oversight authorities through certification procedures and database access interfaces reserved for regulators.
11. Section 11 – Temporary procedure to authorize operation of operators prior to certification of the TVWS database – the DSA supports the provision of such temporary procedure which would allow fast commercial TVWS deployment to take place in areas of needs.

12. Section 13 – Operations Near International Borders – the DSA recommends that the Commission provide more specific definition of “international borders” and proactively engage neighboring countries in border coordination, potentially by adopting harmonized TVWS regulatory frameworks.
13. Section 15 (Addendum) – Licensed TVWS Systems. The DSA believes that shared and license-exempt secondary usage is the most efficient and effective way to exploit the unused or underutilized channels allocated to broadcast while offering full protection to the primary broadcaster users that have assigned channels. The DSA has reservation on the proposed fixed licensed TVWS systems, given that terrestrial broadcasting services remain the sole primary service in the 470-694 MHz band for ITU Region 1. On the other hand, the ITU Radio Regulations allow National Regulatory Authorities (NRAs) to authorize secondary usage via spectrum sharing techniques, such as the cognitive radios and database approaches used in the unlicensed TVWS radios. However, if the Commission chooses to authorize licensed TVWS systems in addition to license-exempt TVWS operations, the DSA would like to suggest the following language is added in section 15 (C) (iv) and (v), to ensure that both licensed and license-exempt TVWS systems can co-exist in the same area, and to prevent any single entity or multiple entities from hoarding the White Space channels using the fixed licensed systems. The DSA also supports the power levels that the Commission is proposing in section 15, which follow the international best practices and are comparable with those set for license-exempt operations, making it easier for the two systems to co-exist.

15. Licensed TVWS Systems

(C) Authorization Framework

(iv) TVWS Spectrum Licenses will be issued on a first-come, first-served basis. Licenses issued for TVWS systems operating on the co-channel and first and second adjacent channels shall not have overlapping nominal service contours except through the coordination process described in paragraph (J). *Up to one-half of the available channels at a location may be made available for TVWS spectrum licenses.*

(v) To promote competition, two channels will be assigned to each frequency division duplex (FDD) licensed TVWS system and one channel will be assigned to each time division duplex (TDD) licensed TVWS system. However, for each TDD system, up to two contiguous channels may be assigned, and for each FDD system, a pair of two contiguous channels may be assigned (up to four channels total), depending on the availability of such contiguous channels and provided that the requirements for this extra capacity can be demonstrated. *Channels of licensed TVWS systems cannot be bonded or aggregated. Licensed TVWS systems cannot share a common ownership.*

In conclusion, the DSA would like to express our strong support to the Commission’s initiative in publishing the draft guidelines on the use of TVWS in Nigeria and would like to offer our continued support to the Commission in future and further adoption of dynamic spectrum sharing policies and technologies. We believe this is an important step towards enabling affordable Internet access in Rural Nigeria and has great potential in expanding connectivity for IoT applications such as that in Agriculture. The DSA is available to discuss these comments and any additional requirement the Commission might have.

Respectfully submitted,



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President
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