



UGANDA
COMMUNICATIONS
COMMISSION

TV WHITE SPACE GUIDELINES FOR UGANDA

DRAFT OF JUNE 2018

UNDER CONSULTATION FROM 12TH JULY TO 30TH AUGUST 2018

1.INTRODUCTION

The growth in popularity of broadband and wireless applications such as connected devices has significantly increased the demand for radio spectrum. Uganda Communications Commission (UCC) is required, under Section 5(1)(c) of the Uganda Communications Act of 2013 (the Act), to allocate, license, standardize and manage the use of the radio frequency spectrum resources in a manner that ensures widest variety of programming and optimal utilization of spectrum resources. The use of white spaces technology provides an opportunity for improving the utilization of radio spectrum resources.

White spaces are radio spectrum resources that are unused at particular times and locations and which can be utilized by other radio communications services through spectrum sharing arrangements. These techniques enable the coexistence of multiple wireless systems within the same frequency band and in turn better utilization of the already scarce radio frequency resource.

TV White Space are the unused television broadcasting channels between the active ones in the VHF (174-230 MHz) and UHF (470-698 MHz) spectrum.

TV White Spaces (TVWS) have emerged with great opportunity for white spaces technology. The TVWS may be used by other services on a secondary basis, i.e. on the condition of not disrupting TV broadcasting services and not claiming protection from them [2].

Standards have been developed to harness TVWS including: **IEEE 802.11af**, **IEEE 802.22** and **ETSI EN 301 598**.

2. OBJECTIVE OF THE GUIDELINES

These guidelines provide guidance on the access and use of TVWS in the range 470- 694 MHz in Uganda.

3. SCOPE OF THE GUIDELINES

The guidelines cover the operation of TVWS in the frequency range 470-694 MHz based on Dynamic Spectrum Allocation (DSA) technique. The allocation is on a secondary¹ basis. The guidelines also specify the mode of management of the TVWS database.

4. AUTHORISATION TO USE TVWS IN UGANDA

TVWS in Uganda shall be on authorized basis. Applicants who intend to provide services using the TVWS will submit application form and the process of authorization will be in accordance with the existing application procedures for radio spectrum.

Applicants will be required to ensure that the equipment they intend to use for transmission as well as the user equipment is type approved before the application process. The equipment type approval will be guided by the Type Approval guidelines.

Authorization shall be granted by UCC upon satisfying associated requirements.

TVWS end-users will be expected to obtain access to user the services by Registration with the service providers.

¹ Secondary use of a band is conditional on not causing interference to the primary services in the band and should not expect to be protected

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Question 1:

Should the use of TVWS be permitted in Uganda? Please explain your answer

Question 2:

What is your view of the scope and proposed requirements and procedures for authorization of service providers that wish to use TVWS as highlighted in sections 3 and 4?

5. TECHNICAL OPERATIONAL PARAMETERS

The use of TVWS shall conform to the following technical requirements:

Parameter	Value
Spectrum range	470-694 MHz
Channel Bandwidth	8 MHz
Equipment and Antennas	All transmit and receive antenna(s) of personal/portable White Space Devices (WSD) shall be permanently attached to the TVWS master WSD (controller).
Maximum power of a Master White Space Device (EIRP)	36 dBm (4 watts)
Maximum power of a client WSD (EIRP)	20 dBm (100 mW)
Maximum Antenna gain	6 dBi

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Maximum antenna height above ground	30 M
Out of band Emission from WSD (EIRP)	Not exceed -56.8 dBm in a resolution of 100 kHz
Spurious Emission from WSD	Not exceed -54 dBm
Interference mitigation	<ul style="list-style-type: none"> ○ WSDs shall operate on unprotected basis subject to not causing interference to other authorized radio communication services. ○ WSDs shall incorporate transmit power control to limit their operating power. A description of the device's transmit power control feature mechanism shall be included in the test report.
Applicable standards	<ul style="list-style-type: none"> ○ IEEE 802.11af; ○ IEEE 802.22 ○ ETSI EN 301 598.

Question 3:

Do you have any concerns about the proposed technical requirements and standards specified for the use of TVWS in Uganda as highlighted in section 5? If yes, please explain.

6. DATABASE MANAGEMENT

UCC shall license a third party service provide who shall be responsible for managing the TVWS spectrum database in accordance under S5(1)(c) of the Act.

Question 4:

What is your view on the proposed arrangement for management of the TVWS database by a third party authorized and under the oversight of UCC as highlighted in section 6?

7. ENFORCEMENT

UCC will take enforcement in accordance with the Act and Spectrum Management Guidelines of 2017 in case of any breach to the requirements for use of TVWS outlined in this document.

8. STAKEHOLDER RESPONSIBILITY

- a) UCC
 - UCC shall manage the usage of spectrum TVWS guidelines
 - License and supervise the TVWS database managers
 - Authorize TVWS service providers
 - Supervise the management of the TVWS database.
- b) Providers of services using TVWS
 - Apply for authorization for TVWS service provision.
 - Install equipment that will provide services within the TVWS
 - Ensure that equipment in use conforms to the technical requirements and is type approved
- c) End user of a service or terminal that is operating using TVWS
 - Register with the service providers
 - Comply with the technical requirements for operation of TVWS in Uganda
- d) Manager of the TVWS database
 - Develop and manage TVWS database.

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Question 5:

Do you have concern(s) with any of the roles assigned to the different stakeholders in the TVWS ecosystem in Uganda as highlighted in section 8?

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Question 6:

Do you have any additional roles that should be included for any of the stakeholders to ensure successful implementation of these guidelines or effective used of TVWS technology in Uganda?

Question 7:

Do you have any general comments or remarks with respect to these guidelines?