



**UGANDA
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COMMISSION**

**THE UGANDA
COMMUNICATIONS
COMMISSION RADIO SPECTRUM
MANAGEMENT GUIDELINES**

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1. BACKGROUND TO UGANDA COMMUNICATIONS COMMISSION RADIO SPECTRUM MANAGEMENT GUIDELINES

1.1. Introduction

The radio frequency spectrum, which is the part of the electromagnetic spectrum from 1Hz to 3000GHz, is a finite, natural resource that is essential to various radio-communication services that are pivotal to society.¹ These include the following types of services

- Telecommunications,
- Aeronautical
- National security communications
- Public protection and disaster relief communications
- Broadcasting
- Satellite communication
- Industrial, science and Medical research
- maritime

This radio spectrum management guidelines set out the key objectives and principles that shall guide the management of the radio frequency spectrum in Uganda for the next five years.

1.2. Context of the UCC Radio Spectrum Management Guidelines

1.2.1 Government Goals

A. Vision 2040

Uganda's national vision is "a Transformed Ugandan Society from a Peasant to a Modern and Prosperous Country within 30 years". To this end, Uganda Vision 2040 seeks to progress efforts in addressing the strategic bottlenecks that have constrained Uganda's socio-economic development such as;

- ideological disorientation,
- weak private sector,
- underdeveloped human resources,
- inadequate infrastructure,
- small market,
- lack of industrialization,
- underdeveloped services sector,
- under-development of agriculture, and
- poor democracy.

The long term plan seeks to strengthening the following fundamentals of the economy to harness the abundant opportunities around the country such oil and gas, tourism, minerals, ICT business, abundant labour force,

¹ The usable spectrum currently ranges from 9kHz to 300GHz.

geographical location and trade, water resources, industrialization, and agriculture;

- Infrastructure (energy, transport, water, oil and gas, and ICT);
- Science, Technology, Engineering and Innovation (STEI);
- Land use and management;
- Urbanization;
- human resource; and
- peace, security and defence.

In the case of ICT, the country, under the fundamentals for development, looks to continuously build robust ultra-high speed, pervasive, intelligent and trusted high speed ICT infrastructure all over the country in line with the changing technologies.

B. National Development Plan II

The National Development Plan (NDP) stipulates the Country's medium term strategic direction, development priorities and implementation strategies. The second National Development Plan (2015/16 to 2019/20), under the theme "Strengthening Uganda's Competitiveness for Sustainable Wealth Creation, inclusive Growth and Employment", aims at strengthening Uganda's competitiveness for sustainable wealth creation, employment and inclusive growth. The Plan prioritizes investment in five (5) areas with the greatest multiplier effect on the economy which are:-

- I. Agriculture;
- II. Tourism;
- III. Minerals, oil and gas;
- IV. Infrastructure development; and
- V. Human capital development.

The plan recognized the continued need to reduce costs of doing business by investing in infrastructure (transport, ICT and energy), improve public sector management, deliver basic services effectively and improve skills and innovation.

C. Communications sector specific goals

The key objective of the Government with respect to the Communications Sector, as outlined in section 3 of the Uganda Communications Act, 2013, is to develop a modern communications sector, which includes telecommunications, broadcasting, radio communications, postal communications, data communication and infrastructure.

In 2014, the Ministry of Information and Communications Technology (ICT) developed a National ICT Policy with broad policy objectives and sub sector policies objectives for Telecommunications, Broadcasting, Postal, Information Technology, Information Management Services as well as other crosscutting and emerging areas. The broad policy objectives include;

- i) Build a knowledge based human capital;
- ii) Promote innovation in economic and social systems;
- iii) Expand ICT infrastructure and its integration throughout the country;
- iv) Deepen utilization of ICT services by government, private sector, Non-Government Organizations and citizenry;
- v) Enhance research and innovation in ICT products, applications, and services; and
- vi) Improve ICT governance and environment in Uganda.

The policy objectives for the telecommunications sub-sector include the creation of a conducive environment for the establishment of a fully liberalized technology-neutral and competitive telecommunications sector. One of the strategies identified towards this is to enforce fair and efficient management of scarce resources such as spectrum, numbering and rights of way.

In 2015, the Ministry of ICT then developed an ICT sector Strategy and Investment Plan (ICT-SIP) with a vision of “a knowledge-based Uganda enabled by a vibrant ICT Sector”. The overall goal of the ICT-SIP is to increase access and usage of ICT in the country so as to transform the economy and improve service delivery. Three (3) strategic themes were identified, and these are:

- Foundational Support for ICT Development – comprising all components that render foundational support to the initiatives of the sector
- Enabling Environment to spur ICT growth and utilization – comprising the initiatives that will inspire trust and confidence in the use of ICTs and thereby bring about growth in ICT and its utilization; and
- ICT for Service Delivery – comprising all interventions aimed at harnessing the potential of ICTs as an enabler of growth and service delivery.

The review of the Spectrum Management Framework to facilitate realization of the broadband goals was identified under the SIP as a strategic intervention towards the objective of ensuring a conducive policy, legal and regulatory framework that is responsive to industry demands.

In 2015, the Ministry of ICT also spearheaded the development of a proposed National Broadband Strategy whose key objective is to facilitate uptake of broadband for socio-economic transformation of the country. Under this, the formulation of an ICT scarce resources management policy for their optimal utilization (*frequency spectrum, orbital slots, .ug top level domain, numbering plans*) was identified as a strategy towards ensuring accessibility and affordability of broadband services for all citizens.

1.2.2 Current legal and regulatory framework

The primary law of the Communications Sector is the Uganda Communications Act 2013, which established Uganda Communications Commission (UCC) as the regulator in the sector. Section 5(1)(c) of the Act confers upon UCC the responsibility 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. Section 25 (1) of the Act provides further that UCC is exclusively responsible for—

- a) planning, monitoring, managing and allocating the use of the radio spectrum;
- b) establishing technical requirements and standards in respect of radio communications apparatus and interference-causing apparatus or any class of that apparatus;
- c) negotiating with the International Telecommunications Union or its affiliated bodies on matters relating to radio spectrum.”

Further, Section 7(1) of the 2013 Act on “Powers of the Minister” provides that the Minister may, in writing, give policy guidelines to the Commission regarding the performance of its functions. Subsection (2) of this section requires the Commission to comply with the policy guidelines given by the Minister under this section.

Section 93 of the 2013 Act on “Regulations” provides that “the Minister may, after consultation with the Commission and with the approval of Parliament, by statutory instrument, make regulations for better carrying into effect the provisions of this Act”. Subsection 2(q) names the licensing and management of telecommunication numbering and orbital slots as one of the regulatory aspects for which the Minister may make regulations.

In fulfilment of its mandate, UCC established a regulatory framework comprising of the following:

- a) In accordance with section 94(I) of the Uganda Communications Act of 1997, UCC made Regulations pertaining to communications services to give effect to the provisions of the Act. These regulations included the Communications (Radio) Regulations, 2005 that establishes a framework for efficient use and management of radio resources without causing harmful interference.
- b) In 2009, UCC issued Radio spectrum policy guidelines to guide the public on the use of the resource in a proper manner. These guidelines outlined the objective and the spectrum management principles that form the key basis for the management of the spectrum in the country.

- c) In 2010, UCC also issued guidelines on radio spectrum hoarding to discourage radio spectrum hoarding and ensure compliance with operators' licences and frequency licensing conditions. These are applicable to both new entrants and the existing operators/users in the telecommunications market in Uganda.
- d) In 2010, UCC also developed an Inspection framework, outlining technical procedures to be followed in the implementation of radio station inspections to determine spectrum user compliance in accordance with the Uganda Communications Act, the Uganda Communications (Radio) Regulations, 2005 and the Spectrum Policy Guidelines.
- e) Subsequent to the 2006 liberalization of the telecommunications market, UCC also issued guidelines on radio spectrum reservation in access bands and microwave bands to facilitate the licence processing for prospective and existing PIP/NTO² licensees applying for use of spectrum.
- f) UCC has also, over the years, acquired equipment and established infrastructure across the country towards strengthening its capacity to plan and monitor the use of the radio spectrum in Uganda more effectively.
- g) Over the years, UCC has issued various guidelines to facilitate introduction and use of different technologies in Uganda including:
 - The guidelines on use of unlicensed radio Spectrum designated for Industrial, Scientific and Medical (ISM) application issued in 2008,
 - The guidelines on use of wireless Short Range Devices (SRD) issued in 2010

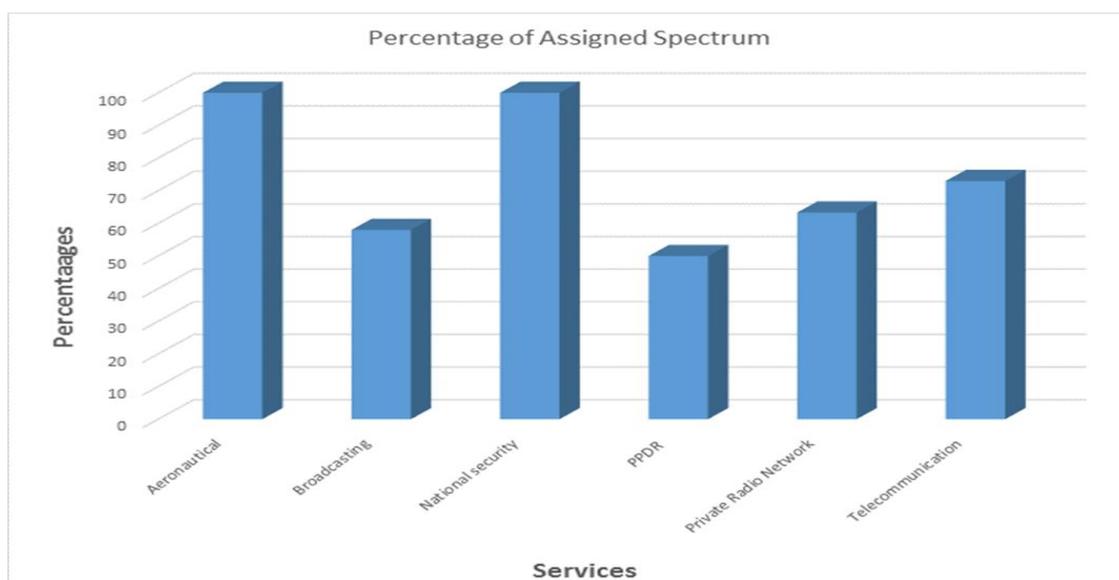
1.2.3 Usage of spectrum in Uganda

Spectrum demand is driven by a number of factors. Key among these are the level of usage of the associated services, technology developments, the national plans, as well as regional and international decisions.

Although there is continued evolution of more spectrum efficient technologies, the industry is also developing new spectrum-hungry systems and applications. The emergence of a networked society and expansion in use of spectrum to other sectors of the economy like agriculture, transport and energy due to developments such as Internet of Things, has also heightened the scarcity of spectrum and its importance to the development agenda of the country.

² PIP – public infrastructure provider, NTO – national telecommunications operator

The level of usage of the various radio communications services also differs with developments in the industry as well as socio-economic factors. The figure below highlights the proportion of spectrum allocated which has been assigned. Of the 80% assigned for telecommunications services, It is noteworthy that the GSM access spectrum band assignments account for 98.61% and the FM radio spectrum band assignments account for 89% with a number of the planning regions at 100%.



The level of assigned spectrum in the respective radio spectrum bands allocated³

1.3. Rationale of the UCC Radio Spectrum Management Guidelines

Recognizing from section 1.2 above:

- the various national goals,
- the constraints on spectrum availability due to the increasing uses,
- technological advancements and competing demands for radio spectrum,

it was determined as necessary that the radio spectrum to be managed in a manner that balances the different spectrum needs of users and technologies, and the legitimate interests of the different users, while controlling any occurrence of interference, and ensuring that it is used efficiently.

³ The graph has been compiled based on the following:

- 1) Broadcasting: Television service and FM Radio
- 2) Public protection and disaster relief
- 3) Telecommunications (based on CDMA, LTE, UMTS, GSM, WIMAX, McWILL, & Point to Point)
- 4) Private Radio Network (Two Way services)

In 2015, UCC commissioned a study into the necessary spectrum management reforms in Uganda. The principal objective of this study was to carry out a review, assessment and analysis of the current spectrum management practices in Uganda, with a view to developing new frameworks to meet the current demands in the short term but also plan for their long-term implications in a way that enables the effective and efficient management of the national spectrum resources taking in consideration the various prevailing and emerging economic, technological/scientific and social aspects. The findings, observations and guidance from this study, which did include feedback obtained during stakeholder consultations, highlighted potentials areas for the improvement of the regulatory certainty and effectiveness as well as paving the way for smoother transition to new radio communications services in the future. The aspects of spectrum management that were covered by the study outputs thus included:

- the regulatory policy,
- planning of allocations and ref-farming,
- spectrum valuation and spectrum pricing,
- and various operational practices in spectrum management.

These UCC Spectrum Management Guidelines are thus developed to facilitate the improvement in the effectiveness and efficiency of the management of the spectrum in Uganda while positioning the country to realise maximum development benefits from the use of the radio resource.

UCC is, however, cognisant of the need to ensure the protection of the health and safety of the public in relation to radio frequency (RF) emissions and in the proper management of electronic waste during the development of radio-communication services. As the regulator responsible for spectrum management in Uganda and therefore radio-communication operations and installations, UCC looks to the guidance provided by the respective mandated national and international bodies such as the International Commission on Non-Ionising Radiation Protection (ICNIRP) that have the expertise in research and developing recommendations on such matters. The requirements and guidance, therefore, on protection of public health and management of the disposal of electronic waste that are put forth by the respective bodies shall apply in the implementation of this Spectrum Management Policy.

2. PREAMBLE OF THE UCC RADIO SPECTRUM MANAGEMENT GUIDELINES

This Radio Spectrum Management Guidelines puts forth the objectives, principles and associated proclamations that shall guide UCC in the management of the radio frequency spectrum within its existing legislative responsibilities in order **to extract maximum social-economic value for Uganda in the dynamic radio-communication environment**, while taking due regard of the various government policy objectives.

These Guidelines shall apply to any person involved or engaged in radio-communications in Uganda.

3. RADIO SPECTRUM MANAGEMENT OBJECTIVES AND PRINCIPLES

3.1. Goal and objectives of UCC Spectrum management

The overarching goal of these Guidelines is to **“To manage the radio spectrum in a manner that promotes the most social-economic value and efficient use of the spectrum in Uganda”**

The specific objectives of the UCC radio spectrum management guidelines are as follows:

- a) To encourage the investment in and use of spectrum efficient technologies and techniques.
- b) To facilitate the development, of the use of radio-communication services and applications by Government, commercial and private users across the country.
- c) To improve the transparency and execution of the spectrum management process in Uganda including the provision of up-to-date information to stakeholders.

3.2. Principles of the UCC Radio Spectrum Management Guidelines

To achieve the objectives above, the management of the radio spectrum by UCC shall seek to:

- i. maximize the public good from spectrum
- ii. promote and protect competition to the benefits of consumers
- iii. follow objective, proportionate and consistent spectrum management processes and procedures
- iv. facilitate critical public emergency and safety of life services through availability of spectrum
- v. observe technology neutrality as applicable
- vi. uphold stakeholder engagement and involvement

- vii. apply market and administrative/regulatory approaches as applicable
- viii. maintain effective regional & international harmonization of radio spectrum
- ix. avoid occurrence of harmful interference among the authorized users of the radio spectrum.

4. SPECTRUM MANAGEMENT PROCLAMATIONS

4.1 Allocation of radio spectrum

The radio spectrum shall be categorized by UCC in different frequency bands according to the different radio services provided and registered in the National Table of Frequency allocation (NFTA).

- a) The National Table of Frequency allocation shall be reviewed and revised periodically to facilitate adoption of new technologies and meet emerging needs of spectrum users. Allocation of the radio spectrum shall be done in accordance with the International Telecommunications Union (ITU) regulations and recommendations.
- b) Public Protection and Disaster Relief communication services and applications shall be availed radio spectrum in line with ITU provisions subject to availability.

4.2 Radio spectrum planning

- a) UCC is exclusively responsible for the development, review, modification, coordination and implementation of frequency band plans.
- b) The radio spectrum planning shall be done following systemic guidelines in accordance with industry recognized recommendations and NTFA.
- c) Spectrum sharing in the various bands shall be considered by UCC on a case by case to promote optimum utilization of spectrum.
- d) In developing frequency band plans, UCC shall strive to ensure that all types of technology that can be used for the service declared under the NFTA are accommodated as applicable.

4.3 Authorization to use radio spectrum

- a) The use of radio spectrum shall be subject to obtaining the respective authorization from UCC by the eligible persons.
- b) The assignment and the instrument of authorization issued by UCC grants the specified party the right to use the respective radio

equipment and spectrum in accordance with the specified terms and conditions.

- c) The specific conditions that shall be issued at the time of authorization and assignment, shall seek to address the technical, social, environmental, legal, economic and financial requirements.
- d) The authorization and assignment shall be done in accordance with the NFTA and specified frequency band plans.
- e) All radio spectrum authorization shall be for a fixed duration that shall be determined by UCC and shall be subject to any changes in the NFTA
- f) Authorization and assignment shall be based on mechanisms or processes that will deliver best value to Uganda including, but not limited to, first come first serve, comparative selection, auction, or license exemption.
- g) Rights of use for any radio frequency cannot be transferred without the prior consent of UCC.
- h) In considering an application for authorization and assignment, the existing spectrum holdings of the applicant shall be considered to ensure that the resultant spectrum distribution does not harm competition.
- i) UCC shall withdraw any radio spectrum:
 - i. that is not brought into use by the date specified in the authorization and/or assignment
 - ii. that is unutilized due to unauthorized suspension in the use of the spectrum.
 - iii. That is determined to be under-utilized by UCC.
- j) Spectrum authorization shall be granted to facilitate research and experimental testing in the development of innovative radio-communication technologies and techniques, subject to availability of spectrum and the justified interests of other spectrum users.

4.4 Spectrum Pricing

- a) Spectrum fees shall be determined on a case by case basis through administrative processes by UCC and market oriented mechanisms as applicable while taking due regard of the various government policy objectives particularly, the national spectrum policy.
- b) The total of Spectrum fees (*consisting of the spectrum access fees and spectrum usage fees*) shall aim to:
 - i. Facilitate the proper management of the spectrum resource, and

- ii. Promote the efficient use of the radio frequency spectrum.
- c) The spectrum fees will be reviewed by UCC periodically to adopt any emerging developments in the market environment, the value of the spectrum and the demand for the spectrum.

4.5 Management of orbital slots

UCC shall protect Uganda's rights with respect to satellite orbital resources to safe guard the national interests.

4.6 Regional and International engagement

UCC shall ensure that Uganda's interests are promoted and safeguarded in regional and international spectrum management activities.

4.7 Compliance

- a) UCC shall implement an inspection and assessment regime to ensure that any equipment deployed and usage of spectrum conforms to the respective standards and specifications. This shall also seek to ensure that the equipment is installed and operated as per the authorization and assignment conditions.
- b) UCC shall acquire and deploy equipment or infrastructure required to effectively monitor and inspect the use of radio spectrum in Uganda. Any interference reported or observed shall be investigated and addressed.
- c) Action that is commensurate to the offence shall be taken against any unauthorized usage of the radio spectrum or non-compliant operations, including, but not limited to, fines, withdrawal of spectrum and other penalties.

5. IMPLEMENTATION

UCC shall develop a Spectrum Master Plan that shall highlight the Spectrum Management priorities and set the respective goals over the next five years. UCC shall develop secondary frameworks and guidelines on any aspect of spectrum management to complement these Guidelines in ensuring the achievement of the objectives of the Guidelines spelt out above.

UCC shall monitor and review the Guidelines to ensure its continued relevance.