NATIONAL COMMUNICATIONS AUTHORITY

PUBLIC CONSULTATION ON THE PROPOSAL FOR THE USE OF THE L6GHz BAND FOR WI-FI 6 SERVICES

JANUARY 2025

NATIONAL COMMUNICATIONS AUTHORITY

INVITATION FOR COMMENT

1. The NATIONAL COMMUNICATIONS AUTHORITY (NCA) intends to authorise the use of 5925 – 6425 MHz (L6GHz) for Wireless Access Systems/ Radio Local Area Networks.

2. Accordingly, in pursuance of its mandate under Sections 58(4)&(5) of the Electronic Communications Act, 2008, Act 775 and Section 4.1 of the National Telecommunications Policy 2005 (NTP'05), the Authority hereby invites views and comments from Service Providers, Consumers of Information and Communication Technology services and the General Public on the proposal for the use of the L6GHz band for Wi-Fi.

3. The public consultation begins with immediate effect and shall expire on **25th Februay, 2026.**

4. All responses/comments should be electronically transmitted as e-mail attachments, in Microsoft Word format to engineering@nca.org.gh.

5. All respondents are requested to complete a response cover sheet (see Page iii) and to use the format/template on Page iii to prepare comments.

6. It would be helpful if your response could include comments on the sections of the document you agree/disagree with.

Confidentiality

7. In furtherance of transparency and openness, the Authority shall consider all responses as non-confidential; accordingly, all submissions shall be published on our website, www.nca.org.gh, on receipt.

8. Please note that copyright and all other intellectual property in responses shall be assumed to be licensed to NCA to use, to meet its legal requirements.

Next Step

9. Subsequent to the completion of the Public Consultation, the Authority shall proceed to publish the conditions for the use of the L6GHz band for unlicensed Wi-Fi 6E services.

Issued by the Director General
8 January, 2026

COVER SHEET FOR RESPONSE TO NCA PUBLIC CONSULTATION ON THE PROPOSAL FOR THE USE OF THE L6GHz BAND FOR WI-FI 6 SERVICES

BASIC DETAILS Name of respondent: Representing (self or organisation/s):   Address:
DECLARATION I confirm that the correspondence supplied with this cover sheet is a formal consultation response. It can be published in full on NCA's website, and I authorise NCA to make use of the information in this response to meet its legal requirements. If I have sent my response by email, NCA can disregard any standard e-mail text about not disclosing email contents and attachments. Name : Signed (if hard copy)

FORMAT FOR COMMENTING ON THE DOCUMENT

Chapter Number	Section Number	Heading	Comment	Suggestion / Proposed Amendment

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
3G	Third Generation of mobile telecommunications technology
5G	Fifth Generation of mobile telecommunications technology
AR	Augmented Reality
ATU	African Telecommunications Union
CEPT	The European Conference of Postal and Telecommunications Administrations
dBm	decibel-milliwatts
ECC	Electronic Communications Committee of CEPT
E.I.R.P	Effective Isotropic Radiated Power
EU	European Union
FCC	Federal Communications Commission
Gbps	Gigabits per second
GDP	Gross Domestic Product
GFAT	Ghana Frequency Allocation Table
GHz	Gigahertz
IEEE	Institute for Electrical and Electronic Engineers
IMT	International Mobile Telecommunications
ISP	Internet Service Provider
ITU	International Telecommunications Union
ITU-R	ITU Radiocommunications Sector
L6GHz	Lower 6GHz frequency band (5925 – 6425 MHz)
LPI	Low Power Indoor
MHz	Megahertz
MNO	Mobile Network Operator
mW	Milliwatt
NCA	National Communications Authority
NTP	National Telecommunications Policy
RLAN	Radio Local Area Network
U6GHz	Upper 6GHz frequency band (6425 – 7125 MHz)
VLP	Very Low Power
VR	Virtual Reality
WAS	Wireless Access Systems
WLAN	Wireless Local Area Network
WRC-23	World Radiocommunications Conference, 2023

CHAPTER 1

INTRODUCTION

1.1 Background

The National Communications Authority (NCA or "the Authority") is mandated by Section 58(1), (3) of the Electronic Communications Act of 2008, Act 775 to "control, plan, administer, manage and license the radio frequency spectrum for telecommunication in a manner that promotes the economic and orderly utilisation of frequencies by electronic communications networks and services".

Sections 58 (4) & (5) of the above-mentioned Act requires the Authority to consult the users of the spectrum in the electronic communications sector in the country as well as regional and international stakeholders towards the development and adoption of a spectrum plan for the allocation of the uses of the spectrum. Also, Section 4(1) of the National Telecommunications Policy, 2005 (NTP'05), requires the NCA to conduct all its regulatory functions in a transparent, open and non-discriminatory manner where regulated Operators and Consumers are allowed to participate in the process, to offer comments and to review proposed decisions.

It is against this background that the NCA is soliciting the views of spectrum users and stakeholders on the use of the L6GHz band.

1.2 The 6GHz Band

The 6GHz band is typically divided into two (2) as follows:

- Lower 6GHz (L6GHz): 5925 – 6425 MHz (a total of 500 MHz)
- Upper 6GHz (U6GHz): 6425 – 7125 MHz (a total of 700 MHz)

Recently, IEEE 802.11ax, has been extended to utilise the 6GHz band (i.e. WiFi 6E). There has been a global push towards providing regulatory clearance for WiFi 6E in countries to augment the traditional 2.4GHz and 5GHz frequency bands and to enable the emergence of a new generation of advanced applications and services such as Augmented Reality (AR) and Virtual Reality (VR).

The subject of this Consultation is the authorisation of Wireless Access Systems/Radio Local Area Network (WAS/RLAN) in the 6GHz band. Some countries have permitted the use of the entire 1200MHz in the 6GHz for WiFi as supported by the standard whereas some have permitted the use of only the lower 6GHz .

The Upper 6GHz band was identified for International Mobile Telecommunications (IMT) in accordance with Resolution 245 (WRC-19) at the last World Radiocommunications Conference, 2023 (WRC-23), held in Dubai. Therefore, the NCA is currently considering the authorisation of WAS/RLAN only in the lower 6GHz band considering the critical role of IMT in the deployment of high speed data services in the absence of a pervasive last mile cable infrastructure. Regional or global harmonisation of frequency bands creates the economies of scale necessary to deliver affordable IMT services to the Ghanaian citizenry.

1.3 Brief Overview of Wi-Fi Technology

Over the last two decades, Wireless Access Systems/Radio Local Area Network (WAS/RLAN) technologies, such as Wi-Fi, have met user needs for ever-growing demand for data. As a major enabler of connectivity in the home, at work, and in public spaces, Wi-Fi is fuelling economic growth and societal development. Wi-Fi contributes to GDP by providing low-cost, high-speed broadband access, helping to bridge the digital divide and supporting the digital economy, allowing organisations to deliver digital services that benefit citizens and fuel economic growth. For individual citizens in Ghana, cellular networks provide the most accessible means to connect to the Internet. However, Wi-Fi provides the ubiquitous mode of connecting productivity devices and entertainment systems to the cellular data network thereby expanding the value of cellular data connectivity for the citizenry. The limited households with fibre connections also leverage on WiFi to connect mobile and portable devices to the Internet. According to Cisco, Wi-Fi supports the offload of 54% of worldwide mobile data traffic and this is set to grow to 71% with 5G [1].

Wi-Fi 6E is enabling compatible devices to benefit from higher data rates, greater responsiveness, increased capacity, better performance in environments with many connected devices and improved power efficiency, as well as other improvements. New

devices, including Wi-Fi 6E routers, have been announced. Research has shown that the Wi-Fi 6E (802.11ax) can support data rates of up to 9.6 Gbps, compared with 1.3 Gbps for Wi-Fi 5 (802.11ac) and also provide wireless capacity for high-bandwidth applications and can support 160MHz channels and uses advanced modulation techniques.

1.4 Structure of this Document

The document is organised as follows; Chapter 2 presents the existing and future use of the L6GHz band, the technical characteristics and operational restrictions for the use of the band for Wi-Fi 6E.

Chapter 3 outlines the technical characteristics and operational conditions for WAS/RLAN in the L6GHz band.

Chapter 4 outlines the regulatory provisions and fee structure for the use of the band for WAS/RLAN beyond a single set of premises.

Chapter 5 outlines the timelines of the activities towards the opening of the band for Wi-Fi 6E.

CHAPTER 2

EXISTING AND FUTURE USE OF THE L6GHz SPECTRUM BAND

2.1 International and National Allocation of the Band

The Radio Regulations allocates the frequency band 5925 – 6425 MHz to Fixed, Fixed Satellite, and Mobile as a primary service on a worldwide basis (Region 1, Region 2 and Region 3).

In Ghana, the L6GHz band is currently used for fixed links and satellites services in accordance with the Radio Regulations.

For the Fixed Service, the band is generally used for high-capacity digital fixed wireless systems. Currently, there are over 300 links in the band used by the Mobile Network Operators (MNOs) and Internet Service Providers (ISPs) nationwide for their long haul backhauling.

For the Fixed Satellite Service, the band is used for Transportable Earth Stations by the financial services, broadcasting stations, Local Authorities and the Oil & Gas industry.

The mobile service already has a co-primary allocation in the ITU Radio Regulations as shown in Table 1 below. Therefore, no international action is needed to enable the authorisation of the band for new services as long as they are operated under conditions which ensure interference free co-existence with incumbent services.

Harnessing the L6 GHz band will improve indoor connectivity and enable the emergence of a new generation of advanced applications and services based on the Wi-Fi 6E standard.

Table 1: ITU-Region 1 and NFAT allocations for the L6GHz band

Frequency Range	**ITU Region 1 Allocation**	**Ghana Frequency Allocation Table (GFAT)**	**Summary of services**
5925-6700 MHz	FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	FIXED FIXED SATELLITE SERVICES MOBILE (yet to be introduced in Ghana)

2.2 Global Developments in Planning the use of the 6GHz

The proposal to use the L6 GHz band (5925 - 6425 MHz) for WLANs on licensed-exempt basis has gained a lot of attention in recent times. -Union in its Decision EU 2021/1067 decided that by 1 December 2021, Member States shall designate the 5 945-6 425 MHz frequency band and make it available on a non-exclusive, non-interference and non-protected basis, for the implementation of WAS/RLANs in accordance with the defined technical conditions [2]. In the United Kingdom, the 5925 to 6425 MHz was allocated for Wi-Fi and RLAN devices effective 12 May 2021 [3]

In April 2020, the United States of America adopted rules that made the entire 6GHz band (5.925–7.125 GHz) available for unlicensed use to usher in WiFi 6E [4]. In May 2021, Canada also published its decision on the technical and policy framework for licence-exempt use in the 6GHz band to allow licence-exempt RLAN use in the 5925-7125 MHz band [5]. In October 2020, Chile permitted low-power, indoor licence-exempt use across the entire 1200 MHz of the 6 GHz band [6]. In the same month, South Korea also approved the entire 6GHz band for unlicensed use [7]. Brazil also decided to release 1200 MHz of spectrum for licence-exempt use in the 6 GHz band [8]. 2] [3]

In July 2021, the Africa Telecommunication Union made recommendations to its Member States to designate the frequency band 5925 – 6425 MHz for use by WAS/RLAN equipment restricted to very low power (VLP) (both outdoor and indoor use) and low power indoor (LPI) use only on a non-exclusive, non-interference and non-protected basis [9].

The upper portion of the 6 GHz band was identified for IMT under WRC-23 Agenda Item 1.2 in ITU Region 1 (Europe, Russia, Africa, Middle East).

CHAPTER 3

TECHNICAL CHARACTERISTICS AND OPERATIONAL CONDITIONS

The Authority intends to adopt the technical and operating conditions developed and adopted by ATU for the Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the 5925-6425 MHz band is as shown in Table 2.

Table 2: Technical and Operational Conditions for the WAS/RLANS in the 5925 – 6425MHz band.

Frequency Band	Application	Maximum Radiated Power or Field Strength Limit	Technical Conditions	Authorised Device Categories
5925 – 6425MHz	WAS LAN	23dBm (200mW) mean e.i.r.p.	• Restricted to indoor use only • Low Power Indoor (LPI) use only (including trains where metal coated windows (Note 1) are fitted and aircraft) • Outdoor use (including in road vehicles) is not permitted • An adequate spectrum sharing mechanism shall be implemented for channel access and occupation • Mean e.i.r.p. density for in-band emissions 10dBm/MHz	• Low Power Indoor (LPI) devices • An LPI access point or bridge is a device that is supplied power from a wired connection, has an integrated antenna and is not battery powered • An LPI client device is a device that is connected to an LPI access point or another LPI client device and may or may not be battery powered
5925 – 6425MHz	WAS LAN	14dBm (25mW) mean e.i.r.p	• Very Low Power (VLP) indoor and outdoor use • Use on drones is prohibited • An adequate spectrum sharing mechanism shall be implemented for channel access and occupation • Maximum mean e.i.r.p. for in-band emissions (Note 2)	• Very Low Power (VLP) device is a portable device
Note 1: Or similar structures of material with comparable attenuation characteristics				
Note 2: The "mean e.i.r.p" refers to the e.i.r.p. during the transmission burst, which corresponds to the highest power, if the power control is implemented				

CHAPTER 4

REGULATORY PROVISIONS

4.1 Licence Exempt Provisions

Section 1(2)(c) of the Electronic Communications Act, 2008, Act 775 grants licence exemption for "the operation by a person for that person's own use or solely for the purpose of that person's business of an electronic communications system in which the equipment comprised in the system is situated:

i. in a single set of premises in single occupation and the transmissions from the equipment are confined to the premises, or
ii. in a vessel, aircraft or vehicle or in two or more vessels, aircraft or vehicles and is mechanically coupled".

The use cases presented in Table 2 qualify for licence exemption per Section 1(2)(c) of Act 775.

4.2 Single Premise Usage

For personal usage (such as AR and VR), there is no requirement to obtain a Licence or Authorisation from the NCA.

4.3 Commercial Deployment

All users of the band for commercial use are required to officially obtain a service Licence or Authorisation from the Authority prior to deployment of services in this band.

The NCA typically charges administrative fee of GHS1,155.00 per region per band for the use of the shared frequency bands by ISPs deploying hotspots and for standard power deployments beyond a single premises.

4.4 Non-Compliance of Guidelines

Without prejudice to any provisions of this framework, the Authority shall have the sole discretion to issue such directives or impose suitable fines, sanctions and/or penalties as permitted by relevant ACTs and/or Regulations, upon breach of or failure to comply with any of the provisions.

CHAPTER 5

TIMELINES FOR CONSULTATION

The Authority intends to complete the consultation on the use of the band for WiFi-6E using the following timelines:

S/N	POLICY DECISION	CONSULTATION TIMELINES	
		START DATE	END DATE
1.	Industry Consultation	26/01/2026	25/02/2026
2.	Review of Comments	02/03/2026	05/03/2026
3.	Stakeholder Engagements to discuss comments	9/03/2026	13/03/2026
4.	Notice of Opening the Band for Wifi-6E	13/04/2026	17/04/2026

References

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[2] European Union, "DECISIONS: Commission Implementing Decision (EU) 2021/1067 of 17 June 2021 on the harmonised use of radio spectrum in the 5 945-6 425 MHz frequency band for the implementation of wireless access systems including radio local area networks (WAS/RLANs)," *Official Journal of the European Union English Edition,* vol. 64; , no. L232 , pp. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2021:232:FULL&from=EN, 2021.

[3] Ofcom, "Decision on changes to the licence exemption for wireless telegraphy devices and on licensing equipment in 57 to 71 GHz - Making more spectrum available for Wi-Fi, Data Networks and Short-Range Devices, and managing the use of higher power equipment in th," 29 April 2021. [Online]. Available: https://www.ofcom.org.uk/__data/assets/pdf_file/0023/218129/2021-LE-exemption-statement-final.pdf. [Accessed 13 July 2022].

[4] Federal Communications Commission, "FCC ADOPTS NEW RULES FOR THE 6 GHz BAND, UNLEASHING 1,200 MEGAHERTZ OF SPECTRUM FOR UNLICENSED USE,"

23 April 2020. [Online]. Available: https://docs.fcc.gov/public/attachments/DOC-363945A1.pdf. [Accessed 14 July 2022].

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[8] J. Barton, "Anatel clears 6GHz band for unlicensed Wi-Fi access in Brazil," 8 March 2021. [Online]. Available: https://developingtelecoms.com/telecom-business/telecom-regulation/10823-anatel-clears-6ghz-band-for-unlicensed-wi-fi-access-in-brazil.html. [Accessed 14 July 2022].

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