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The Independent Communications Authority of South Africa (ICASA)

350 Witch-Hazel Avenue, Eco Point Office Park
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South Africa

Attention:

Mr Bethuel Nkgadime
Email: BNkgadime@icasa.org.za

30 January 2023

Re: Response to ICASA's Annexure B of the Radio Frequency Spectrum Amendment Regulations.


Dear Mr. Nkgadime,

Huawei would like to first thank ICASA for the opportunity provided to our organization to comment on the amendments to Annexure B of the Radio Frequency Spectrum Amendment Regulations 2021, published in the Government Gazette Number 47792 dated 21/12/2022.

As the leading supplier of infrastructure equipment for the telecommunications industry globally as well as a major manufacturer of mobile handsets and other electronic consumer goods, Huawei welcomes the opportunity to submit the following comments for your consideration and requests the opportunity to make an oral presentation.

Please feel free to contact us should you have any questions or require further clarification.

Yours sincerely,



Mr. Musa Ngobeni

30/01/2023

Date

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Huawei provides comments as follows for your consideration:

Recommendation to consider reserving the lower 6 GHz band spectrum (5925-6425 MHz) for licensed Fixed Wireless Access (FWA)

The vast majority of RLANs use the 802.11 standards. The 802.11ax version supports the lower 6 GHz band (5925-6425 MHz). The market names for 802.11ax are Wi-Fi 6 and Wi-Fi 6E. Wi-Fi 6 identifies devices that operate in the 2.4 GHz and 5 GHz bands, while Wi-Fi 6E identifies devices that operate in the 6 GHz bands. The technical features in both cases are the same, only the band support changes.

Wi-Fi 6 introduces significant enhancements beyond the previous version of Wi-Fi (Wi-Fi 5, based on 802.11ac). The main goal of Wi-Fi 6 is enhancing throughput per area in high-density scenarios. Some of the key parameters are shown in the table below for the two versions of Wi-Fi:

	Wi-Fi 5 (802.11ac)	Wi-Fi 6 (802.11ax)
Bands	5 GHz	2.4 GHz & 5 GHz
Channels	20, 40, 80+80, 160MHz	20, 40, 80+80, 160MHz
Acces scheme	OFDM	OFDMA
Antenna	MU-MIMO(4x4)	MU-MIMO (8x8)
Highest modulation	256QAM	1024QAM
Max throughput	3.47 Gbps (4 streams, 160 MHz)	9.6 Gbps (8 streams, 160 MHz)

It must be noted that Wi-Fi 6 can achieve a maximum throughput of 9.6 Gbps when operating the traditional RLAN bands (2.4 GHz and 5 GHz). The current allocations in South Africa for RLANs are identified in the Radio Frequency Spectrum Amendment Regulations 2021, and shown in the table below:

Frequency Bands	Application	Maximum Radiated Power
2400-2483.5 MHz	Wideband Data Transmission Systems (WBDS)	100 mW e.i.r.p.
5150-5250 MHz	Wireless Access Systems / Radio Local Access Network (WAS & RLAN) Indoor use only.	23 dBm e.i.r.p.
5250-5350 MHz	Wireless Access Systems / Radio Local Access Network (WAS & RLAN) Indoor use only.	23 dBm e.i.r.p.
5470-5725 MHz	Wireless Access Systems / Radio Local Access Network (WAS & RLAN)	30 dBm e.i.r.p.



The table above shows that there are 83.5 MHz available for RLANs in the 2.4 GHz band, and 455 MHz available in the 5 GHz band. These bands provide ample capacity to support Wi-Fi 6 capabilities, and allow the accommodation of two 160 MHz channels in 5GHz.

The main use of Wi-Fi in South Africa is domestic access to the internet. Wi-Fi is used to connect devices - computers, TV sets, tablets, mobile handsets - to the broadband router that provides fixed connectivity. Wi-Fi is also used for the same purpose at public locations such as internet cafes, shopping centers, etc.

However, there were only 2.85 fixed broadband subscriptions per 100 inhabitants¹ in South Africa in 2021. Median speeds fixed broadband in South Africa are about 40 Mbps download and 32 Mbps upload². This level of penetration and broadband speed suggests that the current capacity for Wi-Fi use is far from being fully used. It is unlikely that there is congestion due to multiple Wi-Fi networks operating in proximity. It is also unlikely that individual networks require additional throughput, given the difference between the broadband speeds (less than 100 Mbps) and the capability of Wi-Fi 5 and Wi-Fi 6 (several Gbps). Therefore, it is clear that additional capacity for Wi-Fi networks is not required in South Africa. This will remain the case in the foreseeable future since both the level of penetration and the broadband speeds are expected to go up but will not change drastically.

On this basis, Huawei is of the view that allocating the 5925-6425 MHz to RLANs at this stage will not be beneficial to the South African citizens. Instead ICASA should consider reserving the spectrum for licensed Fixed Wireless Access. As noted, fixed broadband penetration is still relatively low in the country. This is because of the difficulty and cost of reaching households with wires or fibre. Wireless broadband has emerged as a serious alternative to wired service, notably with the advent of 4G advanced and 5G technology which can provide speeds comparable to fibre. South Africa has been a pioneer in Africa of the deployment of these technologies, with the operators successfully operating networks and reaching thousands of households.

Recommendation to consider the decision on the whole 6GHz band after November 2023, World Radio Communication Conference (WRC-23)

The lower 6 GHz band is used for a variety of services globally, such as mobile, Wi-Fi, fixed links and satellite. In China for instance, part of the lower 6 GHz band

¹ Source: Statista, <https://www.statista.com/statistics/518946/fixed-broadband-subscriptions-per-100-inhabitants-in-south-africa/>

² Source: Speedtest, <https://www.speedtest.net/global-index/south-africa>



is allocated to private mobile networks for vertical industry enterprises³. In the European Union, the band is allocated to RLANs. Other countries and regions limit the use to the legacy services, namely the fixed services and fixed satellite services.

Huawei suggests ICASA to wait until next year to decide on the use of this band. We note that the 6425-7125 MHz block, adjacent to the spectrum in scope of the amendment to the Regulations proposed by ICASA, will be considered for IMT identification at the WRC-23 in November. Given the proximity of the blocks, and the potential of both blocks for similar uses (fixed wireless access, IMT, RLANs), it is recommended that South Africa choose the best solution suitable for South Africa in the 5925-6425 MHz band based on the 6 GHz industry progress after WRC-23.

³ Source: chinadaily,
<https://www.chinadaily.com.cn/a/202211/22/WS637c0805a31049175432b0ef.html>