Cisco Systems South Africa (Pty) Ltd
Third Floor, Building 2, The Ingress
23 Magwa Crescent, Waterfall City
Midrand, Johannesburg
2090, South Africa
T : +27 10 691 0080
F : +27 10 691 0085

VIA EMAIL (BNkgadime@icasa.org.za)

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Independent Communications Authority of South Africa
Bethuel Nkgadime
350 Witch-Hazel Avenue,
Eco Point Office Park,
Eco Park, CENTURION,
Gauteng

Comments on Notice of Intention to Amend Annexure B of the Radio Frequency Spectrum Amendment Regulations, 2021 to Allow Licence Exempt Use of the Lower 6 GHz Band

Cisco welcomes the opportunity to respond to the above-captioned Notice[1] published by the Independent Communication Authority of South Africa (Authority). Wi-Fi and other unlicenced technologies fuel innovation and development at every level of society. Opening the lower 6 GHz (5925-6425 MHz) band to Wi-Fi/RLAN will capitalize on Wi-Fi's success to create even greater economic, social, and political opportunities for all South Africans. Cisco fully supports the regulatory changes proposed in the Notice and encourages South Africa to take the further step of allocating the upper 6 GHz band (6425-7125 MHz) for use by Wi-Fi and other RLAN technologies.

Introduction

The world's shared experience during the COVID-19 pandemic has demonstrated that reliable and affordable high-speed broadband connections are essential to people's ability to work, learn, and stay connected with their communities. Unfortunately, only 9 percent of South Africans live in a household with access to an internet connection.[2] South Africa's "South Africa Connect" Initiative (SA Connect) responds to that issue by seeking to cover 100 percent of the population

[1] Independent Communications Authority of South Africa, Electronic Communications Act (36/2005): Notice of Intention to Amend Annexure B of the Radio Frequency Spectrum Amendment Regulations, 2021, Notice 1527 of 2022, 690 Government Gazette 47792, at 1 (21 December 2022) (Notice).

[2] *See* Dynamic Spectrum Alliance, "Assessing the Economic Impact of Unlicenced Use in the 6 GHz band in South Africa" at 29 (September 2021) (DSA 6 GHz South Africa Study), *available at* https://dynamicspectrumalliance.org/wp-content/uploads/2022/02/Assessing-the-economic-value-of-unlicenced-use-of-the-6GHz-band-in-South-Africa.pdf.

with broadband service of at least 10 Mbps and 80 percent of the population with 100 Mbps broadband access by 2030.[3] Wi-Fi and other RLAN technologies contribute significantly towards achieving that goal. For example, according to one recent study, about 8 million people per day access the internet via 640,000 public Wi-Fi access points throughout South Africa.[4] According to another study, nearly 11 percent of South African internet users rely on public Wi-Fi for their broadband connections.[5]

Whatever the technology used to get online, Wi-Fi is critical to ensuring that consumers and businesses receive the full benefit of their broadband services by distributing those connections to individual devices and users.[6] The overwhelming majority of broadband data usage takes place indoors, and Wi-Fi ensures that high-speed connectivity extends throughout people's homes and businesses. Any Wi-Fi bottleneck means consumers and businesses experience reduced data speeds, undermining the value of the underlying broadband connection.

Wi-Fi also supports mobile licenced networks. which rely on Wi-Fi to off-load their traffic and thereby reduce the burden on their own networks and increase their customers' speeds. One study reports that wireless users now spend more than half of their time connected to Wi-Fi rather than their mobile networks[7] and 5G networks are expected to offload nearly 80 percent of their data to Wi-Fi and other licence-exempt technologies this year.[8]

Thus, in South Africa and around the world, Wi-Fi is essential for broadband access, indoor connectivity, and mobile network performance. These demands on Wi-Fi will only increase, as technological progress and consumer interest inevitably lead to new devices and use cases

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[3] Department of Communications, South Africa Connect: Creating Opportunities, Ensuring Inclusion (November 20, 2013), *available at* https://www.gov.za/sites/default/files/gcis_document/201409/37119gon953.pdf.

[4] Telecom Advisory Services for the Wi-Fi Alliance, "The Economic Value of Wi-Fi: a Global View (2021-2025)" at 76, 77 (September 2021) (Economic Value of Wi-Fi), *available at* https://www.wi-fi.org/discover-wi-fi/value-of-wi-fi.

[5] See DSA 6 GHz South Africa Study at 29 (citing study finding that 10.7% of Internet users in South Africa use public Wi-Fi.)

[6] *See, e.g.,* ATU-R Recommendation, The Implementation of Emerging Radiocommunication Technologies *et seq*., ATU-R Recommendation 005-0 at 87 (July 2021) (ATU Recommendation), *available at* https://www.atuuat.africa/wp-content/uploads/2021/08/En_ATU-R-Recommendation-005-0.pdf ("For example, 5G FWA [Fixed Wireless Access] is expected to deliver home connectivity to CPE [Customer Premises Equipment] devices distributing the connection throughout the house and to all users within the house through Wi-Fi.").

[7] Hardik Khatri and Sam Fenwick, "Analyzing Mobile Experience during the Coronavirus Pandemic: Time on Wifi," Opensignal (March 2020), *available at* https://www.opensignal.com/2020/03/30/analyzing-mobile-experience-during-the-coronavirus-pandemic-time-on-wifi.

[8] Martha Suarez, "6 GHz Band's Golden Opportunity for Unlicensed Access and Wi-Fi 6," ISE Magazine (April 20, 2020), *available at* https://www.isemag.com/5g-6g-and-fixed-wireless-access-mobileevolution/article/14267403/progression-and-potential. *See also* ATU Recommendation at 88 ("Cisco VNI forecasts for Africa shows that the share of mobile traffic offloaded to Wi-Fi in Africa would be 33% in 2022, compared to 31% in 2017.").

requiring even better speed and latency for Wi-Fi connections. According to one report, more than 18 billion Wi-Fi devices were in use in 2022 (360 times as many Wi-Fi devices as were in use in 2003), with 4.4 billion new devices were shipped.[9] Wi-Fi traffic now doubles every 3 years, and the existing Wi-Fi bands are quickly becoming congested.[10]

Despite this rapid growth, no new mid-band spectrum has been allocated for Wi-Fi since WRC-03.[11] Most of the countries in ITU Region 1 have allocated only 455 MHz of mid-band spectrum – 5150-5350 MHz and 5470-5725 MHz -- for Wi-Fi.[12] Moreover, those allocations are fragmented across multiple bands, making it impossible for Wi-Fi to support new applications enabled by the newest generations of Wi-Fi (Wi-Fi 6E and Wi-Fi 7), which will require much wider channels to achieve deterministic levels of speed and latency.

For these reasons, Cisco strongly supports the Notice's intention to make available the lower 500 MHz in the 6 GHz band for licence-exempt use. As the Notice states, making the lower 6 GHz band available for Wi-Fi and other RLAN technologies is critical to achieving SA Connect's "objectives of enabling socio-economic growth and development."[13] According to the Wi-Fi Alliance, Wi-Fi contributed nearly US$31 billion to South Africa's economy in 2021, and that number is expected to grow to US$41.4 billion in 2025, even without allocating the lower 6 GHz band for Wi-Fi.[14] Adopting the proposed decision, however, will result in an additional US$3.1 billion in annual value by 2025.[15] Moreover, by that same point, Wi-Fi will be responsible for more than 180,000 South African jobs.[16]

By adopting the proposed approach, South Africa will position itself to benefit from the 6 GHz band's thriving Wi-Fi ecosystem. In 2021, over 300 million Wi-Fi 6E devices entered the market and over 350 million devices were expected to ship in 2022.[17] Countries that adopt Wi-Fi in the 6 GHz band will realize the benefits of regulatory harmonization, as economies of scale lower the cost of equipment and increase access to the latest technologies.

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[9] "Wi-Fi Alliance 2022 Wi-Fi Trends," available at https://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-2022-wi-fi-trends.

[10] Dynamic Spectrum Alliance, "Lessons from the Assia Report on 'Wi-Fi and Broadband Data'" (October 2021), *available at* http://dynamicspectrumalliance.org/wp-content/uploads/2021/11/Lessons-from-the-Assia-Report-on-Wi-Fi-and-Broadband-Data.pdf.

[11] ATU Recommendation at 90.

[12] ITU Region 1 also has allocated the spectrum at 2400-2483.5 MHz for licence-exempt use. *Id.*

[13] Notice at 2.

[14] Economic Value of Wi-Fi at 76.

[15] *Id.*

[16] *Id.* at 77.

[17] Wi-Fi Alliance, "6 GHz Wi-Fi: Connecting to the Future" at 4 (October 2022), *available at* https://www.wi-fi.org/download.php?file=/sites/default/files/private/6_GHz_Wi-Fi_Connecting_to_the_future_202210_1.pdf.

Doing so is consistent with the recommendation of the African Telecommunications Union, which has been adopted by several other African countries, including Kenya, Mauritius, and Morocco. Several other African countries – including Egypt, Ghana, Nigeria, and Namibia -- appear likely to follow suit. Cisco encourages South Africa to do likewise, so its citizens have the same opportunities as those in these other African countries, as well as those in countries around the world.

In addition to identifying the lower 6 GHz band for unlicenced use, Cisco respectfully encourages South Africa to take the further step of also authorizing Wi-Fi/RLAN operations in the upper 6 GHz band. Making the entire 6 GHz band available for Wi-Fi will enable the large channel bandwidths available under the latest Wi-Fi standards and the Wi-Fi 7 standard expected to launch next year. Wi-Fi 7 will use 320 MHz channels to deliver throughput speeds of up to 46 Gbps, with highly responsive connectivity and greater flexibility in using network and spectrum resources. Wi-Fi 7 will support not only high throughput use cases like multiple streams of 8K video over the same network, but also use cases with strict latency and reliability requirements, like artificial reality/virtual reality applications in telemedicine, education, or industrial operations. This future proofing is why leading economies like the United States, South Korea, Brazil, and Canada have allowed licence-exempt WAS/RLANs to operate throughout the 6 GHz band.

Allocating all 1200 MHz in the 6 GHz band for Wi-Fi would also further reduce the congestion in existing Wi-Fi bands, benefiting even consumers who may not be able to immediately obtain 6 GHz-capable equipment. Moreover, this decision would also spur broadband access for an additional 1.25 million South Africans by 2030, as Wireless Internet Service Providers (WISPs) are expected to utilize the band for backhaul, capacity, and coverage in underserved communities.[18] In total, South Africa stands to gain over US$57 billion in economic value between 2021 and 2030 if it allocates the entire 6 GHz band for Wi-Fi.[19]

Conclusion

Since 2008, millions of South Africa citizens have relied on Wi-Fi networks. During the next generation of broadband networks, Wi-Fi connectivity will become even more important, as new technologies and use cases change the way South Africans work, learn, and participate in civil society. Cisco urges South Africa to adopt the Notice's proposed changes regarding the lower 6 GHz band so its citizens may benefit fully from the next-generation broadband capabilities associated with the South Africa Connect initiative. Cisco further encourages South Africa to support the identification of the upper 6 GHz band for Wi-Fi, so its citizens have sufficient Wi-Fi spectrum to support the large channels – and advanced use cases -- associated with the current and upcoming generations of Wi-Fi technology.

[18] DSA 6 GHz South Africa Study at 10.

[19] *Id.* at 9.

If there are any questions, please contact the undersigned.

Respectfully submitted,

Cisco Systems, Inc.

Mr. Quintin Mokoena
Compliance Engineer
qmokoena@cisco.com

Mr. Bill Davenport
Senior Director, Technology and Spectrum Policy
bidavenp@cisco.com