



Honoured

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Subject: The present and future of the 6 GHz band in Malaysia and around the world

Introduction

Firstly, the GSMA and Vendor Community represented in this letter would like to thank the MCMC for making this important topic available for discussion via an open forum. Transparency and balance are key for further development of the telecommunications in Malaysia.

5G is expected to be a key pillar of digital transformation and has the potential to impact communities and economies, and as it delivers transformational services it can boost global GDP by US\$2.2 trillion¹. In 2019, mobile technologies and services generated 4.7% of GDP across the globe. By 2024, the contribution is predicted to increase to 4.9% of GDP. This can only happen, however, if sufficient spectrum resources are in place to provide the capacity for innovation and development.

The 6 GHz range is a mid-band frequency and sits at a balancing point between coverage and capacity, providing the perfect environment for citywide 5G connectivity. Harmonisation of 6 GHz spectrum will provide more bandwidth and improve network performance. On top of this, the broad, contiguous channels offered by the 6 GHz range will reduce the need for network densification in cities if mid-band spectrum is not made available, and make next-generation connectivity more affordable for all. GSMA estimates from technical modelling that on average, 2 GHz of mid-band spectrum will drive fuller benefits of 5G networks.

Below you will find details on the GSMA and the Vendor Community's position. In summary, we kindly encourage policy makers to:

- Consider the possibility of making the full 6 GHz range (5925-7125 MHz) available for licensed 5G (5G-NR), guaranteeing at least the upper part of 6425-7125 MHz soon.
- Depending on countries' needs, incumbent use and fibre footprint, the lower part of the 6 GHz range at 5925-6425 MHz could be opened on a licence-exempt basis with technology neutral rules.

We note that MCMC has issued a public consultation on Wireless Local Area Network (WLAN) in the 6 GHz frequency band and applaud its efforts in soliciting input from interested parties with relevant expertise. Some signees of this letter will not be submitting a separate response to the consultation paper, and we kindly request that MCMC considers the recommendations in this letter. We remain available to answer any questions that may arise.

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¹ <https://www.gsma.com/mobileeconomy/>



Mid-band spectrum needs and the importance of licensed spectrum

Mid-band spectrum is a vital component for 5G and discussions about 6 GHz need to balance the different uses and maximise the value of new technologies. The trade-off between licenced 5G and Wi-Fi / 5G NR-U (unlicensed 5G) in the 6 GHz band may affect how 5G develops in the future. The 6 GHz band is a priority band for mobile operators, one of the last pieces of mid-band spectrum to be considered for IMT and allowing Wi-Fi use in any band is effectively irreversible.

Research from Coleago Consulting² on global mid-band 5G spectrum needs shows that careful consideration of 5G spectrum demand in the 2025-2030 time frame is crucial. This is due to the development of new use cases, the rapid take-up of 5G and the need to mitigate the risk of a challenging and costly environment in the near future. The research proposes that regulators make 2 GHz (on average) of mid-band spectrum available for the development of 5G, including FWA.

To make the full capabilities of 5G a reality, licenced mobile services will provide safe, reliable and guaranteed access to spectrum users. This allows long-term investment and enable technology evolution. Licenced spectrum is required to provide the reliability necessary for IMT systems.

Although considered in debates as viable solutions, unlicensed mobile technologies (e.g., 5G NR-U) are not substitutes of licensed 5G and do not fulfill mid-band spectrum needs. Also, they have not yet been implemented in sufficient numbers to project possible interference and are subject to the same power limits as other low-range devices. There is also no proof of coexistence between Wi-Fi and IMT licensed in this range.

The following factors will generate additional spectrum demand for medium ranges, which would be served by the other mid-bands, such as 6 GHz.

The differences of 5G and Wi-Fi capabilities and their complementary roles

There is clear evidence that the deployment and use of mobile broadband have provided substantial economic growth and prosperity. Increased broadband penetration generates growth of GDP, while the Internet will continue to be one of the most important contributors to the improvement of quality of life. According to GSMA projections³, the contribution of the mobile industry to GDP will reach USD 4.9 trillion in 2024.

Mobile data use has increased sharply in recent years, while usage levels vary between countries and regions. Traffic consumption per user is growing substantially. While that happens, Wi-Fi use has been decreasing, moving from Wi-Fi offload to Wi-Fi onload. An Ericsson ConsumerLab study⁴ shows that, on average, 1 in 5 users upgrading to 5G have decreased Wi-Fi usage at home and other locations and that one in ten 5G users have stopped using Wi-Fi.

As markets mature, data packets become more comprehensive, while the greater efficiency 5G spectral NR means a lower cost per MB. This reduces the need for Wi-Fi in public spaces and increases the use of cellular networks using Wi-Fi within the network itself.

5G supports many vertical applications, e.g., industrial automation, such as industrial parks, ports, smart factories, etc. Many of these applications require large network capacity, in particular on the uplink channel. These applications cannot be used without high reliability, speed and mobility making additional licensed 5G spectrum a necessity.

On the other hand, Wi-Fi does not support all vertical applications. Unlicensed use cannot guarantee a level of quality of service similar to IMT and meet all the URLLC requirements for verticals. 5G, combined with the legacy of the IMT network, will better meet the complicated requirements of

² <https://www.gsma.com/spectrum/wp-content/uploads/2021/07/Estimating-Mid-Band-Spectrum-Needs.pdf>

³ <https://www.gsma.com/mobileeconomy/>

⁴ [Ericsson ConsumerLab study](#), May 2021



verticals. The above-mentioned report from Coleago found that meeting the proposed 5G spectrum needs in mid-bands allows a 5G cell site to support 3.5-6x more households with 5G FWA (540 per site – similar to a small town or village). This dramatically improves the ability to widen broadband access through affordable 5G FWA. In India, the cost of covering rural towns using 5G FWA was found to \$9.8bn less than using fibre. In Europe, the savings were of €42bn.⁵

5G does not just offer speeds that can compete with any wireless technology (when implemented with sufficient spectrum), but also offers superior privacy and security attributes. Users can trust their chip for authentication, instead of connecting to unknown and unsafe networks.

Wi-Fi is the last mile on the network broadband user access, with no more than 30m of reach, with quality experience and speed depending on the fixed network itself that reaches the user's premises. While new Wi-Fi technologies can already reach speeds above 6 Gbps, its dependence on fixed infrastructure severely limits its ability to meet demand outside the regions covered by fibre optics, as a bottleneck can occur if there is a lack of available backhaul.

If the band is assigned to unlicensed use, it will be impossible to clean it to allow licensed use in future. Therefore, before making any determinations on the 6 GHz band, it would be prudent to consider how much of the 2.4 GHz and 5 GHz bands are really being used for Wi-Fi, as well as the spectrum around 60 GHz, including the range 66 to 71 GHz. Given Wi-Fi's dependence on backhaul and limited coverage distance, along with mobile broadband being the way more than half of internet users in Malaysia access the internet, Wi-Fi's ability to close the digital gap and assist Malaysia in achieving its national digital transformation goals may be very limited.

The 6 GHz debate and possibilities

China, a market large enough to drive a significant ecosystem, is considering licenced 5G / IMT in the full 6 GHz band. Some countries are also considering using the lower part of the band (5925-6425) for licence-exempt wireless systems while considering the upper part of the band (6425-7125 MHz) for licenced 5G technologies / IMT (e.g. Europe). On the other side, the USA has decided to allow unlicensed services in the full band. CEPT has released its Decision for some of these technical criteria (5945-6425 MHz low power indoor, max. 200 mW e.i.r.p.).

It should be noted that The World Radiocommunication Conference 2019 (WRC-19) approved the agenda item 1.2 for WRC-23, which includes studying the 6425-7125 MHz band and considers its identification for IMT. Countries can support this identification via footnotes, even if not part of the Region 1 debate.

As demand grows during the current decade, the GSMA and the Vendor Community seek to ensure that sufficient mid-band spectrum is available. Therefore, even in countries where spectrum is needed for licence-exempt technologies in the lower band, planning for 5G at 6425-7125 MHz should still continue. Remaining flexible by keeping all options available accounts for the role of new technologies and will support future connectivity and innovation.

In summary, the integration of 5G into our lives and work will impact communities, create jobs and drive forward economic growth. Its success is crucial for economic growth and societal benefits like in the environment as 5G will support an era where connectivity reduces carbon emissions. 6 GHz capacity can help support the communications backbone of a global green economy and provide machine and human connectivity to enhance the availability of 5G for all. A balanced regulatory framework in the 6 GHz band can assist policymakers to leverage the opportunity of 5G.

⁵ <https://www.gsma.com/spectrum/wp-content/uploads/2021/07/Estimating-Mid-Band-Spectrum-Needs.pdf>