

HUAWEI INTERNATIONAL PTE LTD
RESPONSE TO PUBLIC CONSULTATION ISSUED BY IMDA
ON
PROPOSED ALLOCATION OF 6 GHZ BAND IN SINGAPORE
14th March 2023



For the attention of:

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Who is Huawei

Founded in 1987, Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We have approximately 195,000 employees and we operate in over 170 countries and regions, serving more than three billion people around the world.

Huawei's mission is to bring digital to every person, home and organization for a fully connected, intelligent world. To this end, we will drive ubiquitous connectivity and promote equal access to networks to lay the foundation for the intelligent world; provide diversified computing power to deliver ubiquitous cloud and intelligence; build powerful digital platforms to help all industries and organizations become more agile, efficient, and dynamic; redefine user experience with AI, offering consumers a more personalized and intelligent experience across all scenarios, including home, travel, office, entertainment, and fitness & health.

Huawei Research & Innovation

In 2021, Huawei invested even more in research and innovation, as part of our greater efforts to sustain development in the future. We are sparing no efforts as we explore the endless frontiers of science and technology. We are also devoting efforts to identifying the needs of different industries and overcoming global challenges. Guided by our vision of a fully connected, intelligent world, we will work openly with the global scientific community to explore new theories, architectures, and technologies, which will support the ongoing development of the industry.

Openness, Collaboration, and Shared Success

Huawei remains committed to openness and collaboration for shared success. We work with various industry and ecosystem partners to shape new mindsets, and new models for cooperation and building trust. Together, we will build a harmonious and healthy global industry ecosystem.

For more information, please visit Huawei's corporate website at:

<https://www.huawei.com/sg/corporate-information>

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1. SUMMARY OF MAJOR POINTS

- 1.1. Huawei is neutral about IMDA's proposal to allocate the lower 500 MHz of the 6 GHz band (5925-6425 MHz) for RLAN / Wi-Fi use.
- 1.2. At the same time, Huawei seeks IMDA's consideration to reserve the upper 700 MHz of the 6 GHz (6425-7125 MHz) for licensed IMT use, in view of a balanced allocation approach could maximise socioeconomic benefits and cater adequate licensed mid-band spectrum for the development of nationwide 5G services in Singapore.
- 1.3. In regard to IMDA's proposed lower 500 MHz allocation, Huawei recommends that a technology-neutral position be taken to allow the introduction of other license-exempt technologies (such as NR-U) while ensuring adherence to the IMDA proposed technical requirements for Very Low Power (VLP) and Lower Power Indoor (LPI) scenarios.

2. STATEMENT OF INTEREST

- 2.1. Huawei International Pte. Ltd. (Huawei) would like to thank IMDA for inviting the industry and members of the public to provide views and comments on the proposed allocation of the 6 GHz spectrum band for RLAN / Wi-Fi use. Huawei wishes to respond to the IMDA's public consultation, and has incorporated our comments and supporting information in this document.
- 2.2. As a leading global provider of information and communication technology (ICT) infrastructure, Huawei's aim is to promote the adoption of advanced technologies such as 5G in Singapore so as to ensure consistency of network experience for consumers at home or those moving about, and at the same time, fulfil the diverse requirements from vertical industries (such as smart manufacturing, intelligent transport system, smart healthcare etc.).

3. COMMENTS

International Developments

- 3.1. IMDA's proposal to allocate the lower 500 MHz of the 6 GHz band (5925-6425 MHz) for RLAN / Wi-Fi use is in tandem with large global consensus.
- 3.2. It is worth mentioning that among the countries that have reserved the entire 6 GHz band for Wi-Fi (mostly from Americas), Chile has chosen to reverse its earlier decision¹ and allocate only the lower part (5925-6425 MHz) to Wi-Fi. The upper part (6425-7125 MHz) will now be considered for 5G and in the official documentation of the decision, the Chilean Ministry stated that the reasoning behind the reversal is to await a potential decision on the band's future at ITU World Radiocommunication Conferences 2023 ("WRC-23").

Lower 6 GHz Adequate for Keeping Pace with Fibre Broadband & Mobile Speeds & Meeting Increasing Demand for Wi-Fi

- 3.3. Huawei concurs with IMDA's consideration that Wi-Fi will need to keep in tandem with Singapore's nationwide broadband network ("NBN") developments and keep pace with 5G's potential peak speeds.
- 3.4. As a leading Wi-Fi solution provider, Huawei understands IMDA's proposal of allocating the lower 500 MHz of 6 GHz for Wi-Fi use, which will accelerate the adoption of Wi-Fi 6E and Wi-Fi 7 in lower 6 GHz in Singapore by providing additional spectrum to enable Wi-Fi theoretical maximum speeds of up to 9.6 Gbps with Wi-Fi 6E (802.11ax). These Wi-Fi speeds will be adequate to keep on par with the potential 10 Gbps speeds offered by next generation NBN.

Balanced Allocation Approach Maximising Socioeconomic Benefits and Catering Adequate Licensed Mid-Band Spectrum for Development of Nationwide 5G Services

- 3.5. While IMDA addresses the immediate domestic demand for Wi-Fi and the industry adoption of Wi-Fi 6E (and the upcoming Wi-Fi 7), Huawei submits that IMDA should take a balanced approach to the entire 6 GHz allocation

¹ News media from <https://www.gsma.com/spectrum/chile-6-ghz-5g-decision-follows-global-trend/>

(5925-6425MHz for Wi-Fi while 6425-7125MHz for IMT), maximising the socioeconomic benefits and catering for the development of nationwide 5G services in Singapore.

- 3.6. Based on a study on the socioeconomic benefits of the 6 GHz band by GSMA Intelligence², where key factors such as: i) expected adoption of 5G and fibre broadband services, ii) fixed broadband speeds, iii) the existing spectrum availability for licensed and unlicensed use, and iv) utilisation of high-band spectrum for licensed and unlicensed use, were considered, it was concluded that unlicensed use across the entire 6 GHz band was not found to be the most beneficial allocation in all the 24 markets studied (including Singapore).
- 3.7. Additionally, in order to meet the IMT-2020 requirements for 5G and achieve IMDA's key policy objectives³ for the deployment of 5G networks in Singapore, it is recommended that a total of 2 GHz of licensed mid-band spectrum⁴ should be made available in the time frame between 2025 and 2030 (2 GHz is inclusive of the existing 675 MHz of mid-band spectrum that has been assigned to mobile operators in Singapore). In other words, there is still a shortfall of 1325 MHz of mid-band spectrum and the upper 700 MHz of the 6 GHz band will significantly bridge the gap between the spectrum demand and supply.

Technology-Neutral Position for the Allocation of Lower 6 GHz for other Unlicensed Technologies

- 3.8. Huawei also recommends that the lower 500 MHz of the 6 GHz band be allocated on a technology-neutral basis, so as to accommodate introduction of other unlicensed technologies such as NR-U.
- 3.9. NR-U is a continuation from 4G License Assisted Access (LAA) where standardisation work has started since September 2014 in 3GPP Release 13.

² GSMA Intelligence study on The Socioeconomic Benefits of the 6 GHz band, considering licensed and unlicensed options: <https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=72941571&file=160622-The-socioeconomic-benefits-of-the-6-GHz-band.pdf>

³ As mentioned in IMDA's Decision on Policy for 5G Mobile Networks and Services in Singapore: <https://www.imda.gov.sg/-/media/Imda/Files/Regulation-Licensing-and-Consultations/Consultations/Consultation-Papers/Second-Public-Consultation-on-5G-Mobile-Services-and-Networks/5G-Second-Consultation-Decision.pdf>

⁴ GSMA's recommendation on mid-band spectrum needs: <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/5G-Mid-Band-Spectrum-Needs.pdf>

There are currently on-going work items in the 3GPP Release 16 and 17 tracks.

- 3.10. To ensure that there shall be no impact to incumbent services operating within the lower 6 GHz, such as fixed and fixed satellite services, Huawei proposes that the use of Wi-Fi or other unlicensed technology in the lower 6 GHz band shall adhere to the technical requirements set forth by IMDA in both the Very Low Power (VLP) and Low Power Indoor (LPI) scenarios.

4. CONCLUSION

Huawei submits that a balanced approach to the 6 GHz allocation should be adopted for the best outcome in terms of GDP growth and development of Digital Economy in Singapore.

5. REFERENCES

- 5.1. GSMA website: <https://www.gsma.com/spectrum/chile-6-ghz-5g-decision-follows-global-trend/>
- 5.2. GSMA Intelligence study on The Socioeconomic Benefits of the 6 GHz band, considering licensed and unlicensed options: <https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=72941571&file=160622-The-socioeconomic-benefits-of-the-6-GHz-band.pdf>
- 5.3. IMDA's Decision on Policy for 5G Mobile Networks and Services in Singapore: <https://www.imda.gov.sg/-/media/Imda/Files/Regulation-Licensing-and-Consultations/Consultations/Consultation-Papers/Second-Public-Consultation-on-5G-Mobile-Services-and-Networks/5G-Second-Consultation-Decision.pdf>
- 5.4. GSMA's recommendation on mid-band spectrum needs: <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/5G-Mid-Band-Spectrum-Needs.pdf>