Ericsson's Comments to IMDA's Public Consultation on Next Wave of 5G Growth & Deployment in Singapore

POLICY ISSUES & PROPOSED REGULATORY DESIGN FOR 2.1 GHZ BAND

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Rev A

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2 Summary of Major Points

2.1 Ericsson supports and appreciates IMDA's proposal to assign the 2.1 GHz band for 5G. This band, together with the 3.5 GHz and mmWave bands, are valuable bands needed to support 5G services for consumers and industries in Singapore.

2.2 Ericsson wishes to highlight that the 2.1 GHz band is being widely deployed for 4G and/or 5G technologies and supported by a wide availability of the device ecosystem. As such, Ericsson recommends that the assigned band be allowed for continued use to support these technologies.

2.3 Ericsson noted that there is still some demand for 3G use in Singapore and agrees with IMDA's approach in ensuring that there is continued support for this group of subscribers.

2.4 In view of the majority of the current 5G devices being Non-Standalone (NSA) capable, Ericsson recommends the use of 5G bands (including the 2.1 GHz band) for both Standalone (SA) and Non-Standalone (NSA) deployments to cater to both the immediate and long-term needs of the 5G subscribers. This will enable MNOs to achieve the best time to market solution, maximize the use of network resources and ensure that the full potential of 5G can be achieved.

3 Statement of interest

3.1 Ericsson is a leading provider of Information and Communication Technology (ICT) to service providers globally with a strong presence and long history in Singapore.

3.2 Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world.

3.3 Ericsson welcomes the opportunity to provide comments to IMDA's Public Consultation on Next Wave of 5G Growth & Deployment in Singapore: Policy Issues & Proposed Regulatory Design for 2.1 GHz band.

3.4 Ericsson would be pleased to provide any clarifications to our comments where appropriate.

4 Ericsson's Comments

4.1 Comments to Chapter 3

> *Chapter 3, paragraph 20:*
>
> *Bearing in mind the global technological and market developments discussed in the preceding section, as well as the state of our domestic mobile market, IMDA considers that the best and most efficient use of the 2.1 GHz band would be for the provision of 5G services. Therefore, IMDA proposes to refarm the 2.1 GHz band for 5G use after existing 3G spectrum rights in this band expire on 31 December 2021.*

4.1.1

Ericsson agrees and supports IMDA's proposal to enable the use of 5G in the 2.1 GHz band.

Aggregating a 5G band at 2.1 GHz with a 5G mid-band at 3.5 GHz can improve the coverage of the mid-band extensively. The wider population coverage and capacity increase can provide more subscribers with higher data rates while enabling a host of new, low latency applications.

Ericsson wishes to highlight that the 2.1 GHz band is one of the most popular bands with MNOs globally (including Singapore) in deploying Dynamic Spectrum Sharing to support 4G and 5G traffic at the same time. Dynamic Spectrum Sharing has been standardised since 3GPP Release 15 and has an extensive support in the device ecosystem. It enables a cost-efficient use of valuable spectrum assets through the introduction of 5G in a 4G FDD[1] spectrum. Instead of re-farming the band for a specific technology use, the use of intelligent scheduler algorithms and smart coordination between 4G and 5G signaling allows the spectrum to be dynamically shared between both technologies on the same band. More information on Dynamic Spectrum Sharing can be found in the Ericsson white paper, Sharing for the best performance[2].

[1] Frequency Division Duplex
[2] Sharing for the best performance (https://foryou.ericsson.com/rs/891-BLC-619/images/201911%205G%20Access%20-%20Paper%20-%20Ericsson-Spectrum-Sharing.pdf)

Ericsson is of the view that the 2.1 GHz band should be allowed for the use of Dynamic Spectrum Sharing to support 4G and 5G traffic. As stated in paragraph 16 of the consultation paper, it is noted that more than 90% of Singapore's mobile subscribers are 4G subscribers currently and the number of 4G users continues to grow. While Ericsson is convinced of the potential of 5G in Singapore, we believe 4G will continue to generate the largest traffic load in networks in the near term and the 2.1 GHz band is needed to cater to both 4G and 5G subscribers. With the scarce amount of bandwidth available in this band, the use of Dynamic Spectrum Sharing could enable MNOs to serve the instantaneous needs of both 4G and 5G traffic efficiently. This innovative way of deployment could also meet the objective of using the band as a coverage extension solution to the 5G mid-band at 3.5 GHz for both SA and NSA networks.

Chapter 3, paragraph 21:

IMDA is mindful that there is some continued demand for 3G use, as described in paragraph 18 above. IMDA therefore proposes that a small amount of the 2.1 GHz band be used to support the continued provision of 3G services.

4.1.2 Ericsson noted that there is still some demand for 3G use in Singapore and agrees with IMDA's approach in ensuring that there is continued support for this group of subscribers.

Chapter 3, paragraph 24:

In refarming 2.1 GHz for 5G, the long-term policy outcomes in IMDA's 5G Decision must be achieved. In particular:
a. IMDA seeks to facilitate deployment of 5G on SA network architecture. This is because only SA network standards will deliver the full capabilities and performance of 5G such as network virtualisation, intelligence at network edges, and dynamic provisioning or differentiated services for different use-cases. This is opposed to 5G Non-Standalone (NSA) networks, which can only deliver faster mobile broadband speeds;
b. 5G SA networks must be secure and resilient; and

c. IMDA will provide growth opportunities for Singapore's telecommunications sector.

4.1.3 Ericsson agrees with IMDA's long-term policy of 5G deployment on SA network architecture to deliver the full capabilities and performance of 5G. However, it is also our view that IMDA should allow for a flexible use of this band for both SA and NSA networks.

The majority of current 5G deployments globally is still based on NSA mainly due to the benefit of having a fast time to market advantage. This is also aligned with the wider availability of 5G NSA commercial devices. In a recent GSA[3] report on 5G Standalone Update: Executive Summary[4] dated June 2021, GSA has identified 79 operators to have been investing in public 5G SA networks (in the form of trials, planned or actual deployments) as compared to more than 440 operators known to be investing in 5G NSA. In the same report, it is noted that 5G announced devices accounted for more than 800 at May 2021, with only 456 announced devices claiming support for 5G SA.

In view of the majority of the current 5G devices being NSA capable, Ericsson recommends the use of 5G bands (including the 2.1 GHz band) for both NSA and SA deployments to cater to both the immediate and long-term needs of the 5G subscribers. This will enable MNOs to achieve the best time to market solution, maximize the use of network resources and ensure that the full potential of 5G can be achieved.

[3] Global mobile Suppliers Association
[4] 5G Standalone Update: Executive Summary – June 2021 (5G Standalone Update: Executive Summary - June 2021 - GSA)