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# Ericsson Response to OFCA's Consultation on Arrangements for Assignment of Additional Spectrum in the 4.9 GHz Band for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee

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# 01 Distribution and contact details

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# 02 About Ericsson

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 our 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. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

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## 03 Ericsson Favours Efficient Use of Spectrum

Ericsson favours an efficient use of scarce resources and allocation of new spectrum to highest societal benefit. It is also about global or regional coordination and harmonization of spectrum usage to decrease cost of technology by increasing economies of scale hereby maximizing the affordability for all users.

Ericsson wants to see enough spectrum secured to meet the consumer driven growth of mobile broadband usage for 4G and 5G networks, alongside the needs of other spectrum users.

In the latest edition of the Ericsson Mobility Report (June 2020)[1], Ericsson forecasts 5G subscriptions will reach about 190 million by the end of 2020. By the end of 2025, we forecast 2.8 billion 5G subscriptions.

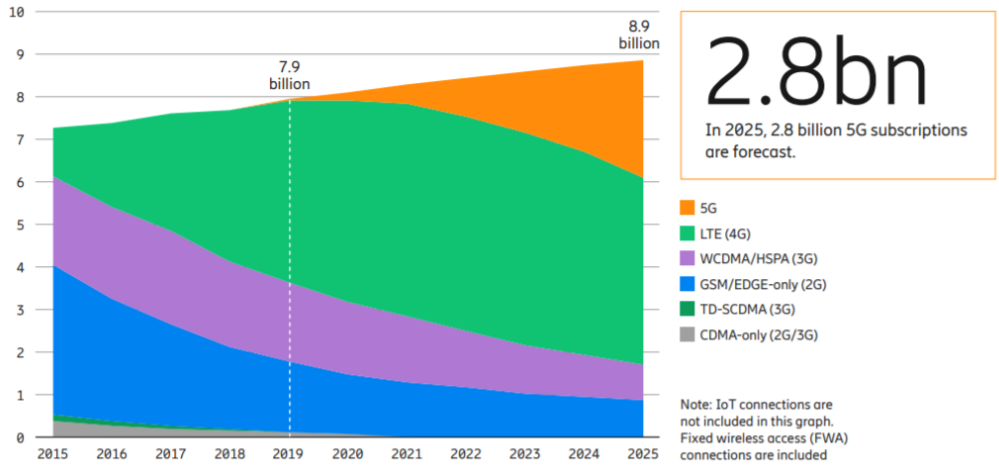


Figure 1: Mobile subscriptions by technology (billion)

Access to sufficient spectrum is therefore of paramount importance in terms of providing affordable mobile broadband and meeting the tremendous growth in mobile data traffic. Ericsson feels confident in our journey towards 5G and with right allocated efficient spectrum usage we will soon experience a fully developed Networked Society.

The 3GPP band n79, i.e. 4.40-5.00 GHz, offers the unique opportunity for a large amount of spectrum below 6 GHz. The amount of contiguous spectrum in this band offers tremendous opportunity for the exploitation of the latest IMT

[1] Ericsson Mobility Report June 2020 (https://www.ericsson.com/49da93/assets/local/mobility-report/documents/2020/june2020-ericsson-mobility-report.pdf)

technologies, particularly regarding to the 5G New Radio air interface which will deliver increased capacity and connectivity.

4.40-5.00 GHz as a mid-band spectrum can be deployed at existing urban macro sites and, supported by dynamic spectrum sharing in low band, reaches indoors. This means that more 5G capacity and higher speeds can quickly be made available to users both indoors and outdoors in Hong Kong.

Ericsson welcomes the opportunity to provide response to OFCA's consultation on Arrangements for Assignment of Additional Spectrum in the 4.9 GHz Band for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee. We appreciate the effort of OFCA to enable further support to the 5G deployment in Hong Kong by ensuring availability of the proposed spectrum.

## 04 Ericsson's Responses

Ericsson supports CA's proposed amendment to the Hong Kong Table of Frequency Allocations as regards the allocation of the 4.80-4.83 GHz band to mobile service on a co-primary basis in addition to fixed service.

With the proposed amendment, the 4.80-4.84 and 4.92-4.96 GHz bands will be available for public mobile service in Hong Kong. This is a good next step after the previous assignment of the 4.84-4.92 GHz band in December 2019.

The 4.40-5.00 GHz band offers a good balance between coverage and capacity, which will support a broad range of 5G applications. Applications such as augmented and virtual reality, the Internet of Things (IoT), connected transport and smart cities will increase the spectrum need in our industry and the 4.40-5.00 GHz band will be important to deliver the feature rich services that are being demanded by the citizen in Hong Kong.

The attention to the 4.40-5.00 GHz band is increasing and the momentum is clearly within the 4.80-4.99 GHz range with a number of large markets. In China, the 4.80-4.96 GHz band has been licensed to MNOs (Mobile Network Operators) for providing public mobile services. Vietnam is on the way to license next year and in the WRC-19 the 4.80-4.99 GHz band was identified to IMT in 42 countries. There are a number of countries outside of these 42 that have also showed interests with some in APAC region.

The continued work is driven by China, Russia, Brazil and Vietnam as significant markets to ensure the start of additional licensing in the 4.80-4.99 GHz band.

In Japan, the 4.50-4.60 GHz band has already been licensed for 5G mobile services in April 2019. MIC of Japan is currently studying the 4.60-4.90 GHz band for 5G NR verticals (so called "Local 5G"). The regulation is planned to be ready by end of 2020. MIC is also studying to allocate the 4.90-5.00 GHz range to MNO in the fiscal year 2021.

From device ecosystem point of view, the second generation 5G chipsets are expected to be available in the mass market from 2020 onwards and are expected to surpass first generation launches with more integrated designs, reduced power consumption, and more frequencies and network operation modes. In the latest Ericsson 5G device availability update in June 2020[1], it was shown that n79 (4.40-5.00 GHz) devices became available from end 2019.

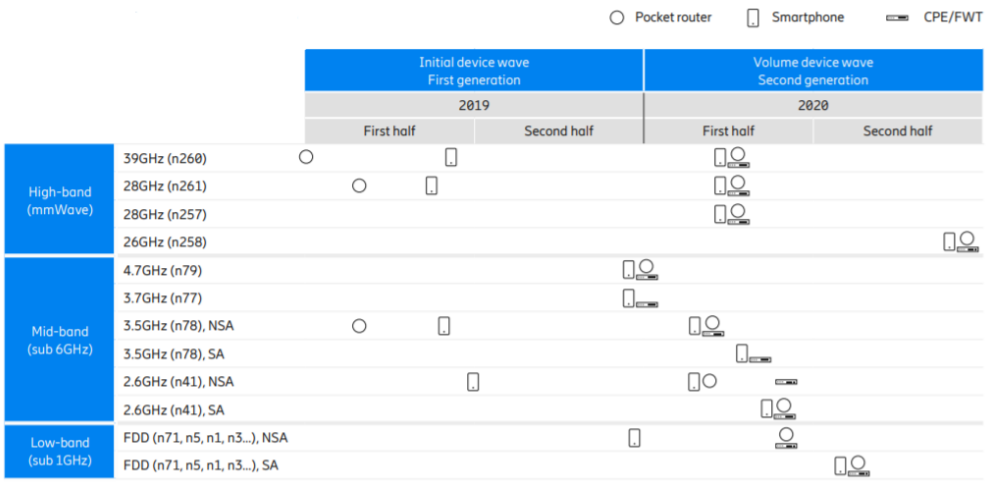


Figure 2: 5G device availability (3GPP)

In another report, 5G Devices Ecosystem Report Executive Summary[2], it is noted that there are already more than 100 n79 band (4.40-5.00 GHz) device models available as of July 2020. This is as shown in Figure 3 on the number of announced 5G devices. This reflects the market interest in the n79 band.

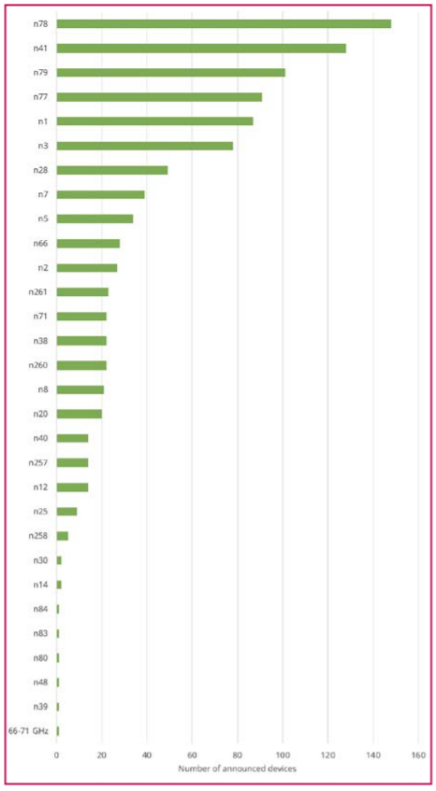


Figure 3: Announced devices with known spectrum support, by specific band (data not available for all devices)

[2] 5G Device Ecosystem Report Executive Summary (GSA, July 2020)

In view of Hong Kong's growing enhanced Mobile Broadband market, more bandwidth, especially in the mid-bands would be needed. The CA proposed additional allocation of 4.80-4.84 and 4.92-4.96 GHz bands for public mobile service serves as another important step towards allowing each MNO to access minimum 80-100 MHz of mid-band spectrum to be able to offer meaningful 5G services in terms of speed and coverage.

In fact, it is rather common in many advanced 5G markets that at least 100 MHz of spectrum is allocated per MNO in the mid-band. In China, 100 MHz of spectrum was allocated to each MNO in the 3.5 GHz band. 160 MHz and 100 MHz of spectrum were also allocated to another MNO in the 2.6 GHz and 4.9 GHz bands respectively. In Korea, two MNOs got 100 MHz of spectrum each in the 3.5 GHz band. In Japan, MNOs are allocated with 100 MHz or more of spectrum in the 3.60-4.10 GHz and 4.5 GHz bands.

Europe has pointed out the 3.40-3.80 GHz as a 5G pioneer band. Since there are three or four MNOs per country, it is expected that MNOs will have 100 MHz each in the next few years. One early example is Finland where each MNO is allocated with 130 MHz of spectrum in the 3.41-3.80 GHz band. Over time, it is also expected that the 3.80 - 4.20 GHz will become available to MNOs in Europe.

GSA and Ericsson recommend 80-100 MHz per operator in the mid-bands and 800-1000 MHz in the mmWave bands. It is essential for a healthy market competition that the recommended amount of spectrum is available to the operators in the early phase of 5G introduction especially for mid-bands to provide outdoor-to-indoor communications and coverage solutions. The mmWave is important for providing 5G full capabilities to consumers.

In the longer term, Ericsson would encourage the CA to consider the rest of the n79 band (4.40-4.80 GHz) be put up for allocation. This will allow MNOs in Hong Kong to access even more spectrum for enhancing the 5G public mobile services beyond the early stage of 5G deployment.