Ericsson submission to Radio Spectrum Management's 24 – 30 GHz use in New Zealand Discussion Document

June 2021

Introduction

- Ericsson welcomes the opportunity to respond to Radio Spectrum Management's 24 - 30 GHz use in New Zealand Discussion Document (**Discussion Document**).
- Spectrum to support 5G is fast becoming a measure of global competitiveness.
- Research indicates that demand for mobile broadband isn't abating.
- For example, globally mobile network data traffic grew 51 percent between Q4 2019 and Q4 2020.[1]
- And it is not forecast to slow. In 2026, 5G networks will carry more than half of the world's mobile data traffic.[2]
- The New Zealand Commerce Commission's Annual Telecommunications Monitoring Report 2020[3] found that the amount of data consumed over mobile networks by retail customers and the rate of usage continued to grow in New Zealand in 2020.
- A pipeline of spectrum in low, mid and high bands to meet forecast growth in demand for 5G should remain a key spectrum policy priority.
- Provided below is a market update on the first two years of 5G and responses to selected questions raised in the Discussion Document.
- Ericsson supports the submission made in response to the Discussion Document by the Global Mobile Suppliers Association (**GSA**).

Market Update

- The November 2020 Ericsson Mobility Report [4] found that despite COVID-19 related uncertainties, the pace of introducing new 5G functionality increased in 2020 in both network and device domains.
- For example, by the end of 2020:
    - more than 100 operators had announced commercial 5G service launches and the first 5G standalone networks were launched.
    - 200 service providers had launched Fixed Wireless Access (**FWA**) services, with an estimated 60 million FWA connections and FWA data traffic representing an estimated 15 percent of global mobile network data traffic.[5]

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[1] Ericsson Mobility Report Nov 2020

[2] Ibid

[3] Microsoft Word - 2020 Annual Telecommunications Monitoring Report(4048746.1) (comcom.govt.nz)

[4] Ericsson Mobility Report Nov 2020

[5] Ibid

- As of April 2021 globally there were 140 live 5G networks, 703 5G devices and 751,000 new 5G conenctions each day.[6]
- As of May 2021, Ericsson is supporting 85 5G networks, had 136 5G commercial agreements and 78 announced 5G contracts.[7]
- By the end of 2021, 25% of the world's population will be covered by 5G.[8]
- In terms of forecast growth, by 2026:
    - 5G networks will carry more than half of the world's mobile data traffic.
    - In South East Asia and Oceania, 5G subscriptions will account for more than 30 percent of all mobile subscriptions, compared with 40 percent of all mobile subscriptions worldwide.
    - FWA connections will reach more than 180 million and account for a quarter of all mobile network data traffic globally. *(Out of these, 5G FWA connections are expected to grow to more than 70 million by 2026, representing around 40 percent of total FWA connections.)*
    - Over the long term, traffic growth will be driven by both the rising number of smartphone subscriptions and an increasing average data volume per subscription, fueled primarily by more viewing of video content.[9]

Response to Selected Questions Raised in the Discussion Document

Question 4

Do you think the existing fixed service licenses in 26 GHz can be migrated to the 23 GHz and/or 38 GHz fixed service bands?

- Yes. Ericsson believes that there is ample capacity to migrate the existing fixed links in the 26GHz bands to the conventional point to point bands at 23GHz and 38GHz.

[6] Ericsson, Ericsson Mobility Report Nov 2020, GSMA Intelligence

[7] The latest publicly announced 5G contracts - Ericsson

[8] Ericsson Mobility Report Nov 2020

[9] Ibid, Video traffic currently accounts for 66 percent of all mobile data traffic and is forecast to account for 77 percent of all mobile data traffic by 2026.

Question 6

Do you agree New Zealand should allocate 24.25 - 27.5 GHz primarily for IMT use?

- Yes. Ericsson strongly supports the allocation 24.25 - 27.5 GHz (3GPP band n258) for IMT (5G Services).
- As shown at **Figure One** below[10] mobile network data traffic grew by 51% between Q4 2019 and Q42020 despite the effects the COVID-19 pandemic.

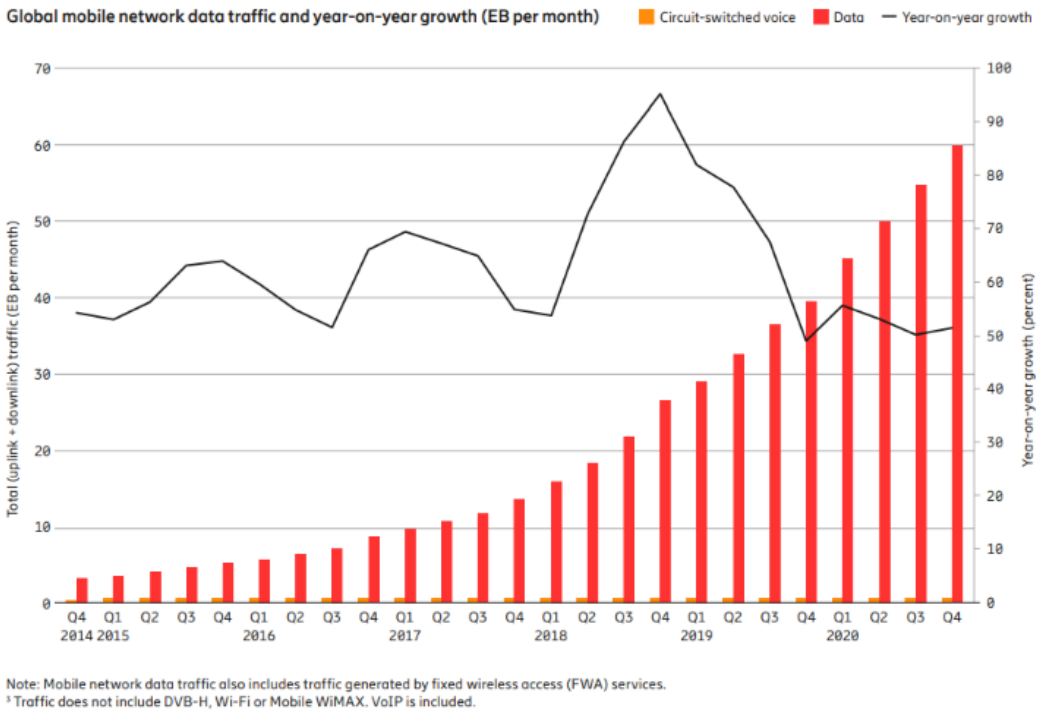
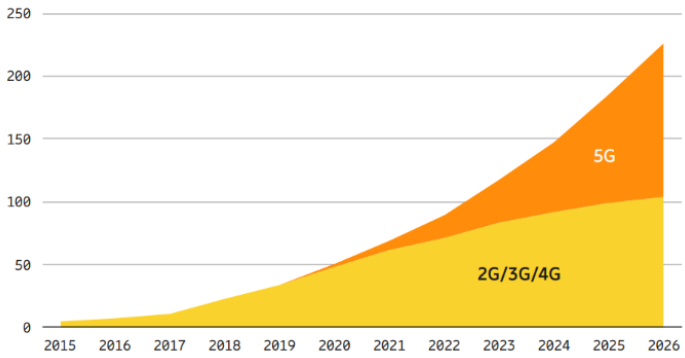


Figure One: Mobile network data traffic grew 51 percent between Q4 2019 and Q4 2020

[10] Ericsson Mobility Report Nov 2020

- As depicted in **Figure Two** below, in 2026, 5G networks will carry more than half of the world's mobile data traffic.

Figure 12: Global mobile data traffic (EB per month)



Note: This graph does not include traffic generated by fixed wireless access (FWA) services.

54%

In 2026, 5G will account for an estimated 54 percent of total mobile data.

- In terms of spectrum to meet the forecast growth in demand for mobile data, it is Ericsson's view is that the three incumbent New Zealand mobile operators will require at least 1GHz of mmWave[11] spectrum each for 5G to reach its maximum potential.

Question 7

How should RSM accommodate other use in this band such as space services?

- New Zealand is in a unique situation of being able to dedicate 3GPP Band 258 (24.25GHz to 27.5GHz) entirely to IMT services.
- Any current services that exist in the band should be carried forward into future management rights created in 3GPP Band 258.
- Any future applications would require the consent of the management right holder.

Question 8

How do you see our proposal of the 28 GHz band allocation?

- Ericsson is broadly supportive of the proposal outlined in the Discussion Document for the 28GHz band allocation.

Question 9

Which option do you prefer for allocating 28 GHz band? Or is there any other option for managing the shared use of IMT, ESIMs and FSS in the 28 GHz band?

- Ericsson supports Option 2.

[11] In additional to at least 100MHz of mid-band spectrum.

Question 11

If you prefer Option 2, how much spectrum do you think RSM should allocate to ESIM, IMT private network/FWA? And what's the preferred spectrum placement?

- The primary focus in New Zealand appears to be on the 26GHz band (n258) with the proposal that this band be allocated for future IMT use.
- Nonetheless, it would be prudent to allocate at least some of the 28GHz band (n257) for IMT purposes.
- This is primarily to accommodate band n257 end user devices.
- Ericsson suggests that at least 600MHz in the 28GHz band is allocated to IMT for private networks/FWA use.

Question 14

What's your preferred licensing option in 26/28 GHz spectrum?

- Ericsson supports the use of national nationwide management rights.

Question 18

Do you agree RSM should refer 3GPP standards to set the regulatory requirements for spectrum allocated to IMT?

- Yes. Historically New Zealand has not applied technology limitations to nationwide management rights (the sole exception being the temporary allocations in the 3600MHz to 3800MHz range).
- However, the experience in the 2.6GHz band where Band 7 (FDD) and band 41 (TDD) operations are occurring within the allocated spectrum is probably not sustainable for widespread deployments.

Question 19

Should we introduce a break point for MR technical conditions mid-way through the duration of the MR? Or is it sufficient to set AFELs based on current technology and standards only?

- No. Ericsson does not support setting a break point.
- The AFEL should be set for the duration of the management right.
- The inclusion of a breakpoint would introduce too much uncertainty when contemplating equipment upgrades and updates for several years prior to the breakpoint date.

Question 20

Do you agree RSM should mandate equivalent ETSI harmonised standards for radio licences in Radio Standards Notices and review these standards regularly?

- Yes. Ericsson agrees that RSM should mandates equivalent ETSI harmonised standards for radio licences in Radio Standards Notices and review these standards regularly.

Question 21

Which option do you prefer to set the unwanted emissions?

- Ericsson prefers Total Radiated Power (**TPR**) to set unwanted emissions.
- Adopting this metric will ensure alignment with the approach taken for Band 78 (3400MHz to 3800MHz).

Question 23

Do you agree that RSM should set unwanted emissions limits (in UELs and AFELs) base on 3GPP category B requirements? If no, please explain the reasons and provide your suggestions?

- Yes.
- The single biggest issue that Ericsson has faced with respect to product compliance relates to the "brick wall" AFEL's that were specified by default within a number of management rights.
- The consequence of this default specification is that even 3GPP compliant equipment would not comply with the New Zealand requirements that exist in some bands. In practice, achieving compliance with these "brick wall" AFEL's was extremely challenging to achieve.

Question 25

Do you have any insights on equipment availability at, or close to, the edge of 24.25 GHz that can meet both pre-1 September 2027 and post-1 September 2027 unwanted emission limits? Is there any additional technical solution such as frequency separation or filtering required for some equipment types?

- Ericsson considers that the WRC-19 agreement for the unwanted emission limits for the 26 GHz band should be followed.
- Ericsson does not support values which would be more stringent than those decided at WRC-19 and does not support the start of phase 2 before 1st September 2027.

Question 35

Which option do you prefer for arranging the existing fixed service in the 26 GHz band?

- Ericsson supports Option 2.
- Any fixed links remaining in the 26GHz band (n258) should be by negotiation between the private management right holder and the fixed link owner.
- The default position should be that these links should be removed. If fixed links are carried forward into private management rights the incumbent has no motivation to remove the equipment. This occurred in Band 3 with a number of fixed links persisting in the spectrum for many years after it was allocated in 2021.