

# Ericsson submission to the ACMA's Five Year Spectrum Outlook 2024 – 29

May 2024



## Introduction

- Ericsson welcomes the opportunity to provide a response to the Australian Communications and Media Authority's (**ACMA's**) draft Five Year Spectrum Outlook 2024-29 (**draft FYSO**).
- Ericsson supports the FYSO format and considers it a useful tool to determine progress on spectrum band allocations and trends in the Australian market.
- The response includes reference to past Ericsson submissions that support defining an allocation timeframe for the 600MHz and 6GHz bands for IMT.
- Ericsson also supports the submission made to the draft FYSO by the Australian Mobile Telecommunications Association (**AMTA**).

## Summary

- The Q4 2023 update to the Ericsson Mobility Report<sup>1</sup> found a 28% increase in mobile network data traffic from Q4 2022 to Q4 2023 with strong forecast growth to continue.
- The 600 MHz band is the only suitable new low band spectrum for wireless broadband (**WBB**) to support coverage and capacity for Mobile Network Operators (**MNOs**). This band should be expedited for initial investigation.
- Growth in both Fixed Wireless Access (**FWA**) and Mobile Broadband (**MBB**) networks will require additional spectrum in the next two to four years. Specifically, emerging use cases associated with 5G Advanced (e.g., XR) will drive increasing data traffic. While technology improvements may assist to drive efficiencies, it will be many years before this traffic can be offloaded onto 6G networks which will also require suitable additional spectrum.
- While the 3.3 GHz band is a good candidate, only the upper 6GHz band has the quantity of spectrum required to meet the needs of **WBB** service providers until new 6G suitable bands are added.
- In the 1.9 GHz band, Ericsson supports the ACMA's decision to implement Option 3 from the 2023 consultation paper<sup>2</sup> and awaits the new framework that will ensure:
  - No interference to base station receivers deployed in the 2.0 GHz band.
  - No additional licence conditions for 1.8 GHz transmitters.
- In the 3.4 – 4.0 GHz band, Ericsson recommends:
  - the addition to the **FYSO** works program to align Spectrum Licenced, and Area Wide Licenced spurious domains. (i.e., above 4040 MHz.)
  - that the maximum EIRP limit in 3700 – 3800 MHz is aligned with the EIRP limit below 3700 MHz. This should occur no later than other

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<sup>1</sup> [Ericsson Mobility Report](#)

<sup>2</sup> <https://www.acma.gov.au/consultations/2021-11/exploring-future-use-19-ghz-band-consultation-402021>



restrictions (required due to poorly performing in-market Radio Altimeter receivers) being removed in March 2026.

- Ericsson also supports:
  - 2300 – 2302 MHz being identified for spectrum licence allocation for IMT with an update to licence conditions emissions requirements below 2300 MHz to align with 3GPP standards.
  - studies being undertaken under WRC-27 agenda item 1.7 for possible future IMT use.

### Market Update

- The Ericsson Mobility Report<sup>3</sup> found:
  - Mobile network data traffic grew 28 per cent between Q4 2022 and Q4 2023 with network data traffic expected to increase from 200 EB per month in Q1 2024 to over 550 EB per month in 2029.
  - In South-East Asia and Oceania, data traffic per smartphone is expected to increase from 26 GB per month to 66 GB per month in 2029.
  - Traffic volume in the downlink is dominated by video.
  - Traffic volume in the uplink is not as clear cut with Cloud-storage overtaking communications (messaging, VoIP, video calls) in some markets.
  - Cellular IoT is predicted to have a 12% CAGR from 2023 – 2029.
  - At the Women's football world cup in Australia in August 2023, 40% of devices were 5G capable.
  - Indoor small cells vastly outperform traditional Distributed Antenna Systems (**DAS**) for cell edge and average user throughputs.
- From a capacity perspective, the forecast 2.5 times data traffic increase in South-East Asia between 2024 and 2029 will create network capacity constraints unless additional spectrum becomes available. Ericsson strongly supports an allocation of the entire upper 6GHz band for IMT to mitigate identified spectrum constraints in this timeframe.
- Ericsson welcomes the forthcoming allocation of Highly Localised WBB for Private 5G in the 3.4 – 4.0 GHz band, which will create new opportunities for small cell deployment that have been shown to outperform **DAS** deployments.

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<sup>3</sup> [Ericsson Mobility Report](#)



## Response

### 600 MHz

- It is well understood that sub 1 GHz bands provide the coverage layer for IMT networks. That is, they provide vast coverage to land mass not reached by mid-bands in regional and rural areas. They also provide depth of coverage into buildings such as stairwells.
- Typically, there is higher network congestion in low bands due to the superior signal quality it provides when compared to mid and high bands from the same mobile site. MNOs have made significant investments in low band deployments in their networks over many years to provide this coverage.
- Ericsson strongly supports **the 600 MHz band being expedited to initial investigation stage** with the aim of making this available for WA-WBB. This would provide an opportunity for MNOs to address capacity constraints in coverage areas.

### 1.9 GHz

- Ericsson supports the ACMA's decision to progress the 1.9 GHz band for implementation of DECT 2020 Australia wide and Rail Mobile Radio (**RMR**) along rail corridors. We look forward to reviewing the framework to support the deployment of rail communications capabilities. Ericsson recommends the review of the 1.9GHz band should ensure:
  - No additional restrictions are placed on 1800 MHz base station transmitters.
  - **Base Station receivers in the 2 GHz band are protected from interference** which can be caused by transmitters in the 1.9 GHz band.

### 2.3 GHz

- Ericsson supports allocating 2300 – 2302 MHz to spectrum licence format to ensure the entire 2.3 GHz band becomes spectrally efficient. When this is undertaken, **Ericsson recommends aligning licence emissions requirements with 3GPP 36 / 38 series** wide area base station standards, below 2300 MHz and above 2400 MHz. A spectrum licence condition update to align with 3GPP emissions standards would also support reducing MNO's carbon emissions.

### 3.3 – 4.0 GHz

- **The 3300 – 3400 MHz band is important as it is** adjacent to existing spectrum licenced spectrum and supported by 3GPP n77 equipment. However, the upper 6 GHz band is seen as best option to increase IMT mid-band spectrum to address future 5G growth due to the larger potential bandwidth available.
- Ericsson supports HL-WBB in the 3400-3475 and 3950-4000 MHz which would supports 5G use. We welcome the use of 3GPP medium range emissions standards. Priority however must be afforded to adjacent area and adjacent frequency spectrum licence holders to ensure there is no interference, which could degrade these networks.



- Ericsson strongly recommends the ACMA review the spurious emissions domain in licences for spectrum licence holders and align this with in place area wide licence conditions by changing the upper edge to 4040 MHz. This is supported by AMTA, other vendors and existing spectrum licence holders.
- Ericsson supports AMTA's position on the maximum TRP for spectrum licence transmitters in 3700 – 3800 MHz. That is, these restrictions should be removed with all other Radio Altimeter mitigations on 31 March 2026. We encourage the ACMA to add this to the 2024-25 FYSO work program.
- Ericsson also supports the ACMA updating progress on the radio altimeter rectification process and provide industry with reassurance that the mitigation removal date committed to by ACMA is still correct or advise that the migration date can be brought forward.

## 6 GHz

- Ericsson believes the 6 GHz band is the best band to address MNO's capacity constraints driven by actual and forecast mobile network traffic growth and growth in 5G handset penetration.
- The upper 6 GHz is the only band with a quantity of spectrum suitable to address the growing needs of IMT detailed in the Coleago report *"Estimating the mid-band spectrum needs in the 2025-2030 time frame in Australia"*.<sup>4</sup>
- MNO's need deterministic spectrum to support a wide range of use cases including mission critical apps. Opportunistic spectrum access, which comes about through sharing the same frequencies and areas, is inadequate. We look forward to providing a response to the expected consultation on this band.
- We reiterate our previous position that by assigning the entire 6GHz band in an equitable manner, an efficient outcome can be achieved. That is, by providing access to RLAN in the lower 6 GHz and IMT in the upper 6 GHz, whilst protecting the needs of incumbents in the band.
- We also strongly support the ACMA's decision to progress this band considering decisions made to support adoption for IMT at WRC-23.

## Future IMT bands

- 6G will have new use cases which will demand higher bit rates and lower latency. Ericsson supports studies into potential new IMT bands to support 6G as identified at WRC-23. 3GPP will have a Stage 1 workshop in May 2024 which will consider initiatives of interested parties that will then initiate the task of defining 6G requirements.

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<sup>4</sup> <https://amta.org.au/wp-content/uploads/2021/12/Coleago-Report-Demand-for-mid-bands-spectrum-in-Australia.pdf>