

**Ericsson submission to the Australian
Communications and Media Authority (ACMA)
Expiring Spectrum Licence Stage 2 Consultation**

June 2024



Executive Summary

- Ericsson welcomes the opportunity to provide a response to the Australian Communications and Media Authority's (ACMA's) Expiring Spectrum Licences Stage 2 consultation (**ESL stage 2**).
- Ensuring investment friendly licence terms for expiring spectrum licences (**ESL**) that provide wireless broadband services by International Mobile Telecommunications (**IMT**) technologies is critical to Australia remaining a leading technology adopter in the transition to 5G Advanced and 6G and Australia's future economic prosperity.
- Ericsson supports:
 - Recognition that spectrum is a significant input cost to mobile network operators.
 - Prioritising long-term sustainability of mobile network investments over short term fiscal gains.
 - Promoting spectrum license conditions that combine the predictability needed to incentivise investment with the flexibility to drive innovation.
 - Renewals that are automatic and free from additional fees.
 - Commercial, operational, and technological flexibility to maximise spectrum utilisation.
- All in-market spectrum used for IMT, plus additional spectrum within the centimetric range 7-24 GHz, will be required to support Australia's transition to 5G Advanced and 6G.¹
- Continued strong uptake of 5G shows that demand for high-performance connectivity remains resilient. For example:
 - At the end of 2023, 45% of the world's population had 5G coverage, with 5G accounting for 25% of all mobile data traffic, with 1.6bn 5G subscriptions.
 - Between Q3 2022 and Q3 2023 there was a 33% growth in mobile data traffic.
 - By 2029, 5G is expected to reach 85% of the world's population, representing 76% of total mobile data traffic with 5.9bn mobile subscriptions.²
- Ericsson considers that the **ESL** stage 2 consultation, (the "information gathering exercise"), is the appropriate time to comment on the overarching Spectrum Licensed Technical Framework (**SLTF**) with respect to **ESL** and adjacent bands use.

¹ [6G spectrum – future mobile life beyond 2030 – Ericsson](#)

² [Ericsson Mobility Report](#)



- When deciding whether 4G and 5G use in **ESL** bands promotes the long-term public interest, the **SLTF** must also align with those technology standards. (i.e., 3GPP).
- When the **SLTF** is not aligned to 3GPP there will be significant cost and time implications for Australian mobile operators managing tens of thousands of deployed cells, serving millions of customers. This includes the need to develop bespoke equipment for the Australian market.
- The **ESL** process is an opportunity for the ACMA to revisit the **SLTFs** for expiring bands to ensure the broader public interest is met, rather than the interests of a few adjacent receivers at a small number of locations.

ESL Bands

- In the 700 MHz, 2 GHz, 2.3 GHz and 2.5 GHz spectrum licensed bands, ACMA licence conditions for non-spurious emissions do not align with 3GPP 38.104 section 6.6.1 (Unwanted emissions – maximum offset).
- These **ESL** bands do not follow 3GPP's definition for operating band unwanted emissions (**OBUE**) on at least one of the transmitter operating band edges.

3GPP 38.104 Operating Band Unwanted Emissions

Table 6.6.1-1: Maximum offset of OBUE outside the downlink *operating band*

BS type	<i>Operating band characteristics</i>	Δf_{OBUE} (MHz)
<i>BS type 1-H</i>	$F_{\text{DL,high}} - F_{\text{DL,low}} < 100 \text{ MHz}$	10
	$100 \text{ MHz} \leq F_{\text{DL,high}} - F_{\text{DL,low}} \leq 900 \text{ MHz}$	40
<i>BS type 1-C</i>	$F_{\text{DL,high}} - F_{\text{DL,low}} \leq 200 \text{ MHz}$	10
	$200 \text{ MHz} < F_{\text{DL,high}} - F_{\text{DL,low}} \leq 900 \text{ MHz}$	40

- Non-alignment to 3GPP manifests itself as either:
 - A bespoke transmitter for Australia; or
 - A customised site solution (e.g., external filtering); or
 - Restricted maximum transmitter power spectral density, or
 - Site deployment restrictions.
- Ericsson strongly recommends that as part of the **ESL** process, technical frameworks are aligned to 3GPP Release 36 and 38 series. That is, the technology standards in place now and for the foreseeable future for these bands.

700 MHz

- In-market spectrum licensees are currently subject to stricter unwanted emission levels at frequencies in the range 806-813 MHz to aid co-existence with TLMS. This results in bespoke radio and site solutions that include additional filtering to meet licence requirements above 806 MHz.



- Ericsson requests that these limits be reviewed as part of the **ESL** process to match or become closer to 3GPP Release 36 / 38 series standards.

1800 MHz

- In the ACMA's "Review of the 1800 MHz band spectrum licence technical framework" outcomes paper³, the ACMA stated:

"We note that a technical framework is not designed to guarantee a zero-interference environment. While the technical framework provides a level of certainty regarding the interference environment that can be expected, there is an onus on operators to design a network that can operate within this environment."

"When designing a technical framework for the purposes of an initial spectrum allocation, the ACMA has greater flexibility to optimise the arrangements for the likely technologies under consideration."

- Ericsson recommends the ACMA reconsider its position when drafting new **SLTF's** to apply to reissued expiring spectrum licences.

2 GHz

- The **SLTF** licence conditions post the ACMA 2GHz TLG do not completely reflect 3GPP standards. The frequency ranges 2100 – 2110 MHz is part of the operating band unwanted emissions for 3GPP, however is treated differently by the ACMA.
- We request that this frequency range (2100 – 2110 MHz) follow 3GPP Release 36 and 38 series emission limits, as per Ericsson's recommendations to the ACMA's 2GHz SLTF public consultation Dec 2022.⁴

2.3 GHz

- For the 2.3 GHz band, there are more stringent emissions requirements than 3GPP Release 36 and 38 series emissions requirements in the frequency range outside 2300 - 2400 MHz. This is for absolute emission levels and how those emissions are referenced. There is no consistency with other **ESL** bands for the "spurious domain" requirements and they are more stringent than 3GPP Release 36 / 38 series requirements.
- The net impact is that the spectrum licence conditions are 9dB to 35dB more stringent than 3GPP.
- Ericsson requests the licence conditions are amended to align with 3GPP as part of the **ESL** process.
- Specifically, Ericsson recommends:
 - Non-AAS radios limits be referenced per transmitter port as is required in 3GPP and other ACMA spectrum licensed bands.

³ [Review of 1800 MHz spectrum licencing technical framework – consultation 35/2021 | ACMA](#)

⁴ <https://www.acma.gov.au/consultations/2022-11/review-2-ghz-spectrum-licensing-technical-framework-consultation-382022>



- AAS radios be aligned to the same operating band unwanted emissions frequency range as defined in 3GPP.
- Emission limits 2290 – 2300 MHz be aligned to 3GPP Release 36 / 38 series (Cat B) limits.
- Ericsson also supports the band being aligned with 3GPP Band 40 which allows operation down to 2300 MHz.

2.5 GHz

- As a technical Liaison Group (TLG) has not been held for the 2.5GHz band, the emission requirements do not reflect current 4G / 5G emissions from radios.
- Ericsson understands a TLG for this band is expected to commence late 2024 and considers it is an opportune time to align the licence conditions with 3GPP Release 36 / 38 series emissions limits for the current uses and for spectrum licences issued as an outcome of the **ESL** process.
- Current licence conditions can be 39dB more stringent than 3GPP 38.104 standard and requires a bespoke solution.

3.4 GHz

- The 3.4 GHz band is the most aligned to 3GPP standards, however there are several changes which Ericsson recommend occur prior to existing licences expiring in 2030.
- The proposed changes have been highlighted by numerous parties, are well documented and should form part of the ongoing 3.4 - 4.0 GHz **TLG**.
- Further detail is provided submissions made by Ericsson's to the Five-Year Spectrum Outlook 2024-29⁵ and AMTA's submissions.

⁵ <https://www.acma.gov.au/consultations/2024-03/draft-five-year-spectrum-outlook-2024-29>